

IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH
LIBRARY



Class No. 2376822

Book No. _____

THE NEW CAPITAL
BINDING WORKS,
Chitra Darwaza, Lal Masjid,
DELHI.

11

12

13

14

15

16

THE
JOURNAL
OF THE
ROYAL AGRICULTURAL SOCIETY
OF ENGLAND.

— — —
VOLUME 71.

(BEING THE SEVENTY-FIRST VOLUME ISSUED SINCE THE
FIRST PUBLICATION OF THE JOURNAL IN 1844)

PRACTICE WITH SCIENCE.

LONDON
JOHN MURRAY, ALBEMARLE STREET.
1910.

v.71
13576

EXTRACT FROM THE SOCIETY'S BY-LAWS

(Dating from the Foundation of the Society) —

“The Society will not be responsible for the accuracy of the statements or conclusions contained in the several papers in the Journal, the authors themselves being solely responsible.”

TABLE OF CONTENTS.

VOLUME 71, 1910.

	PAGE
PORTRAIT OF KING EDWARD VII.	<i>Frontispiece</i>

SPECIAL ARTICLES.

King Edward VII. and the Royal Agricultural Society of England By the EDITOR.	1
The Production of Plant Food in the Soil (With Seven Illustrations) By EDWARD J. RUSSELL, D.Sc.	9
Tuberculosis as regards Heredity in Causation and Elimination from Infected Herds By PROFESSOR SIR JOHN MCFADYEAN, M.B., B.Sc., C.M.	27
Red Poll Cattle By J. B. CHEVALLIER.	46
The Origin of Some Old Agricultural Words By PROFESSOR WALTER W. SKELAT, Litt.D.	56
Suffolk Sheep (With One Illustration) By S. R. SHERWOOD.	64
The Devon Pack Horse as an Army Horse (With One Illustration) By LIEUT.-COLONEL C. R. STAVELEY.	79
State Aid to Agriculture in Canada By ERNEST H. GODFREY.	90
Churnability of Cream (With Six Illustrations) By W. F. COOPER, B.A. (Cantab.).	113

CONTEMPORARY AFFAIRS.

Contemporary Agricultural Law By AUBREY J. SPENCER, M.A.	122
The Meat Industry in its Relation to Agriculture in the United Kingdom By LOUDON M. DOUGLAS, F.R.S.E.	136

OFFICIAL REPORTS.

	PAGE
The Liverpool Show, 1910	147
<i>(With Eight Illustrations)</i>	
By THOMAS McROW.	
The Trials of Agricultural Motors, 1910	179
<i>(With Six Illustrations)</i>	
By the JUDGES.	
Miscellaneous Implements Exhibited at Liverpool	199
<i>(With Four Illustrations)</i>	
By WM. CROSS, M.INST.C.E.	
Milk and Butter Tests at the Liverpool Show	213
By ERNEST MATTHEWS.	
I.—Milk-yield Tests	213
II.—Butter Tests	217
III.—Experiment on the Colouring of Milk and Butter	221
Agricultural Education Exhibition, 1910.	223
Forestry Exhibition, 1910	227
By ROBERT ANDERSON.	
Plantations and Home Nurseries Competition, 1910	230
By SAMUEL MARGERISON.	
Farm Prize Competition, 1910	240
By WILLIAM H. HOGG.	
Report of the Council to the Annual General Meeting of Governors and Members of the Society, December 7, 1910	270
Report on the Results of the Examinations in 1910 for—(1) The National Diploma in Agriculture ; (2) The National Diploma in Dairying.	282
Annual Report for 1910 of the Principal of the Royal Veterinary College	289
By PROFESSOR SIR JOHN McFADYEAN, M.B., B.Sc., C.M.	
Annual Report for 1910 of the Consulting Chemist	300
By J. AUGUSTUS VOELCKER, M.A., B.Sc., PH.D.	
Annual Report for 1910 of the Botanist	311
By PROFESSOR R. H. BIFFEN, M.A.	
Annual Report for 1910 of the Zoologist	316
By CECIL WARBURTON, M.A., F.Z.S.	
The Woburn Experimental Station of the Royal Agricultural Society of England	322
By J. AUGUSTUS VOELCKER, M.A., B.Sc., PH.D.	

	PAGE
Statistics affecting British Agricultural Interests	350
The Weather of the past Agricultural Year	358
By FREDERICK J. BRODIE, F.R. Met. Soc.	
Rainfall, Temperature, and Bright Sunshine during 1910	360
The Rainfall of 1910	361

NOTES, COMMUNICATIONS AND REVIEWS.

The Dual Purpose Cow at Liverpool	364
By K. J. J. M.	
The Physiology of Reproduction, by Dr. F. H. A. Marshall	366
The Norfolk Experimental Farm	366
"The Lady of the Farm World"	370
The 5th Earl Spencer	371

APPENDIX.

List of Council of Royal Agricultural Society of England	i
Chief Officials of the Society	ii
Distribution of Governors and Members of the Society, and of Ordinary Members of the Council	iii
Table showing the Number of Governors and Members in each Year from the Establishment of the Society	iv
Financial Statement by the Chairman of the Finance Committee	v
Trust Funds held by the Royal Agricultural Society	vii
Balance-sheet for 1910, with appended Statements of Ordinary Income and Expenditure and of Receipts and Expenditure at the Liverpool Show, 1910	viii
Statement showing Distribution of Prizes at Liverpool Show	xvi
Minutes of the Council Meetings in 1910	xvii
February 2, xvii; March 2, xix; April 6, xxi; May 4, xxii; May 12, xxiii; June 1, xxv; June 23, xxvi; July 27, xxxi; November 2, xxxii; December 7, xxxiv.	
Proceedings at the General Meeting, June 23, 1910	xxviii
Proceedings at the Annual General Meeting, December 7, 1910	xxxv
Officials and Judges at the Liverpool Show, 1910	xlvi
Awards of Prizes at Liverpool, 1910	xlvi
Prize List for Norwich Show of 1911	cxviii
Index to Volume 71	cxviii

Binding of the Volumes of the Journal.

GOVERNORS, MEMBERS, and others who desire to have their copies of the Journal bound in green cloth to match the Bound Volumes issued by the Society from 1901 to 1904, are requested to communicate on the subject with the Society's printers, Messrs. JAMES TRUSCOTT & SON, LTD., of Suffolk Lane, Cannon Street, London, E.C.

Messrs. TRUSCOTT & SON have contracted—(1) To bind the Volume in the green cloth cover, with gilt lettering at the back, and the Society's device in gilt at the side, at the price of 2s., including delivery of the Bound Volume; (2) To supply the green cloth lettered cases, for the use of local bookbinders, at the price of 1s. 3d. each, post free, or 1s. each, if called for at their Offices in Suffolk Lane.

Back Volumes of the Journal will also be bound in the same description of cover at the rate of 2s. 3d. per Volume; but the cases for the Volumes of the First and Second Series cannot be supplied separately.

All parcels and correspondence thereon should be addressed (*postage or carriage prepaid*) to Messrs. JAMES TRUSCOTT & SON, LTD., and *not* to the Society.

To avoid confusion the Volumes of the Journal have been re-numbered from the beginning, and the following Table shows both the Old and the New Numbers of each of the Volumes which have been issued since the first appearance of the Journal in 1839:—

NEW NUMBERS	OLD NUMBERS	NEW NUMBERS	OLD NUMBERS
FIRST SERIES		SECOND SERIES—continued.	
Vol. I (1839-40) Vol.	I. Parts I. (i), II. (ii), III. (iii), and IV. (iv).	Vol. 41 1880 ...	Vol. XVI. Parts I. (xxxi) and II. (xxxii).
" 2 1841 ...	II. I. (v), II. (vi), & III. (vii).	" 42 1881 ...	" XVII. I. (xxxiii) and II. (xxxiv).
" 3 1842 ...	III. I. (viii), II. (ix), & III. (x).	" 43 1882 ...	" XVIII. I. (xxxv) and II. (xxxvi).
" 4 1843 ...	IV. I. (xi), and II. (xii).	" 44 1883 ...	" XIX. I. (xxxvii) and II. (xxxviii).
" 5 1844 ...	V. I. (xiii) and II. (xiv).	" 45 1884 ...	" XX. I. (xxxix) and II. (xl).
" 6 1845 ...	VI. I. (xv) and II. (xvi).	" 46 1885 ...	" XXI. I. (xli) and II. (xlii).
" 7 1846 ...	VII. I. (xvii) and II. (xviii).	" 47 1886 ...	" XXII. I. (xliii) and II. (xliv).
" 8 1847 ...	VIII. I. (xix) and II. (xx).	" 48 1887 ...	" XXIII. I. (xlv) and II. (xlvi).
" 9 1848 ...	IX. I. (xxi) and II. (xxii).	" 49 1888 ...	" XXIV. I. (xlvii) and II. (xlviii).
" 10 1849 ...	X. I. (xxiii) and II. (xxiv).	" 50 1889 ...	" XXV. I. (xlix) and II. (l).
" 11 1850 ...	XI. I. (xxv) and II. (xxvi).		
" 12 1851 ...	XII. I. (xxvii) and II. (xxviii).	THIRD SERIES	
" 13 1852 ...	XIII. I. (xxix) and II. (xxx).	Vol. 51. 1890 ...	Vol. I. Parts I. (1), II. (2), III. (3), and IV. (4).
" 14 1853 ...	XIV. I. (xxxi) and II. (xxxii).	" 52 1891 ...	" II. I. (5), II. (6), III. (7), and IV. (8).
" 15 1854 ...	XV. I. (xxxiii) and II. (xxxiv).	" 53 1892 ...	" III. I. (9), II. (10), III. (11), and IV. (12).
" 16 1855 ...	XVI. I. (xxxv) and II. (xxxvi).	" 54 1893 ...	" IV. I. (13), II. (14), III. (15), and IV. (16).
" 17 1856 ...	XVII. I. (xxxvii) and II. (xxxviii).	" 55 1894 ...	" V. I. (17), II. (18), III. (19), and IV. (20).
" 18 1857 ...	XVIII. I. (xxxix) and II. (xl).	" 56 1895 ...	" VI. I. (21), II. (22), III. (23), and IV. (24).
" 19 1858 ...	XIX. I. (xli) and II. (xlii).	" 57 1896 ...	" VII. I. (25), II. (26), III. (27), and IV. (28).
" 20 1859 ...	XX. I. (xliii) and II. (xliv).	" 58 1897 ...	" VIII. I. (29), II. (30), III. (31), and IV. (32).
" 21 1860 ...	XXI. I. (xlv) and II. (xlv).	" 59 1898 ...	" IX. I. (33), II. (34), III. (35), and IV. (36).
" 22 1861 ...	XXII. I. (xlvii) and II. (xlviii).	" 60 1899 ...	" X. I. (37), II. (38), III. (39), and IV. (40).
" 23 1862 ...	XXIII. I. (xli) and II. (xlii).	" 61 1900 ...	" XI. I. (41), II. (42), III. (43), and IV. (44).
" 24 1863 ...	XXIV. I. (1) and II. (2).	" 62 1901 ...	Issued as an Annual Bound Volume.
" 25 1864 ...	XXV. I. (iii) and II. (iv).	" 63 1902 ...	Issued as an Annual Bound Volume.
SECOND SERIES		" 64 1903 ...	Issued as an Annual Bound Volume.
Vol. 26 1865 ...	Vol. I. Parts I. (1) and II. (2).	" 65 1904 ...	Issued as an Annual Bound Volume.
" 27 1866 ...	II. I. (3) and II. (4).	" 66 1905 ...	Issued as an Annual Volume in paper covers.
" 28 1867 ...	III. I. (5) and II. (6).	" 67 1906 ...	Issued as an Annual Volume in paper covers.
" 29 1868 ...	IV. I. (7) and II. (8).	" 68 1907 ...	Issued as an Annual Volume in paper covers.
" 30 1869 ...	V. I. (9) and II. (10).	" 69 1908 ...	Issued as an Annual Volume in paper covers.
" 31 1870 ...	VI. I. (11) and II. (12).	" 70 1909 ...	Issued as an Annual Volume in paper covers.
" 32 1871 ...	VII. I. (13) and II. (14).	" 71 1910 ...	Issued as an Annual Volume in paper covers.
" 33 1872 ...	VIII. I. (15) and II. (16).		
" 34 1873 ...	IX. I. (17) and II. (18).		
" 35 1874 ...	X. I. (19) and II. (20).		
" 36 1875 ...	XI. I. (21) and II. (22).		
" 37 1876 ...	XII. I. (23) and II. (24).		
" 38 1877 ...	XIII. I. (25) and II. (26).		
" 39 1878 ...	XIV. I. (27) and II. (28).		
" 40 1879 ...	XV. I. (29) and II. (30).		

(The numerals within brackets indicate the numbers as printed on the several Parts of each Series.)



Copier, Arthur Cadbury-Jones, Ltd

Emer y Walker ph. co.

JOURNAL
OF THE
ROYAL AGRICULTURAL SOCIETY
OF ENGLAND.

KING EDWARD VII.
AND THE
ROYAL AGRICULTURAL SOCIETY OF
ENGLAND.

To say that the British nation was deeply and profoundly moved but very feebly expresses the sentiments felt by all when it became known to his subjects that the revered and beloved sovereign, Edward VII., had passed away. The nation's loss was all the more terrible owing to the suddenness with which the blow fell. His Majesty's determination to continue his royal labours as long as it was physically possible for him to do so, led to the vast majority of his people only realising that he was seriously ill on Friday, May 6, 1910. Thus it was that on the morning of Saturday the 7th, only a very insignificant number of his subjects were in any way prepared to learn that his life was no longer at the service of the dominions over which he had reigned so actively to within forty-eight hours of his death. It would be superfluous to record how the whole of the members of the Royal Agricultural Society were in unison with their fellow subjects in a feeling of deep grief for the loss of their King. For those who, besides the sorrow due to the loss of a sovereign, had to suffer that affliction which comes through the death of a near and dear relative, the members of the Society, in a special degree, had the feelings of respectful and affectionate sympathy which may very truthfully be said to have prevailed universally on this sad occasion.

Expressions of such sentiments, together with assurances of loyalty, were duly conveyed by the Council of the Society,

on their own behalf and on that of the members they represent, to our new King, George V., and assurances of respectful sympathy and regret were also sent to Queen Alexandra and all other members of the Royal Family. Those of the Council who make themselves responsible to the other members of the Society for the conduct of the Journal, felt, however, that this number should not appear without containing a further loyal tribute to the departed monarch.

The high office to which the late King succeeded by right of birth entails many and onerous duties, and it is well known that his ardent devotion to such duties did much to shorten his life. Even more valuable to his subjects than his capacity for work was his love of peace. With his large-mindedness, his knowledge of men, and his warmth of heart, he was untiring in his efforts to foster the friendliness of nations. His success when so acting, both in cases affecting his own people and in others where neighbouring countries were alone concerned, led to his being acclaimed as "Edward the Peace Maker."

King Edward knew full well how the encouragement of the arts of peace was an insurance against the risk of war, and no peaceful art appealed more to His late Majesty than did Agriculture. On more than one occasion in the course of his life he most graciously said that he knew of no better way of helping English Agriculture than by assisting the Royal Agricultural Society of England.

It is as a grateful and respectful tribute to his memory, and as a record of his work often carried on at considerable personal inconvenience, and always in addition to the many other important duties of state, that it has been decided to publish the following account of the late King's valued and gracious connection with, and patronage of the Society.

HIS LATE MAJESTY'S CONNECTION WITH THE "ROYAL."

The connection of His late Majesty with the Royal Agricultural Society began at a very early period of his life, he having been taken at the age of ten to the Society's Show at Windsor in 1851. He was thus early put in the way of following his Royal parents' example as ardent devotees of Agriculture. He next visited the Society's Show at Battersea in 1862, but his active participation in the business of the Royal did not, however, begin until, on February 3. 1864, having graciously signified his assent, he was elected a Life Governor by acclamation. He then soon made it clear that he had no intention of simply allowing his name to be used without showing any active interest in the affairs of the Society, for we find that he was present at the Show at Plymouth in 1865,

the year after his election, on which occasion he was accompanied by the Princess.

In 1868, on the proposal of Lord Bridport, seconded by Sir Walter Stirling, he was unanimously elected President of the Society for 1868-9, and as such attended, together with the Princess, the Royal Show at Manchester. During this year he was on several occasions present at the Council meetings, sometimes taking an active part in their proceedings.

Again, in May, 1878, His Royal Highness was elected President of the Society for the ensuing year on the motion of the Earl of Powis who, in the speech in which he proposed him, alluded to the "hearty goodwill and satisfaction which his position as President of the British Section of the Paris Exhibition has spread among our French neighbours across the channel." Although, as is well known, the demands on his time and activity were most numerous, we find the then Prince of Wales attending the Council meetings several times during his term as President. In the same year he visited the Society's International Show at Kilburn on four occasions, on two of which he was accompanied by the Princess, and at the close of his year of office he sent a gracious letter to thank the Council for their co-operation during the course of it.

In 1879, having signified his desire to take an active part in the proceedings of the Society, he was elected a Trustee. Passing over the next few years and simply remarking that during this period the Prince continued to show in many ways his real interest in the Society, we find him once more accepting the office of President to which he was elected in 1885. On the 16th of July of that year he visited the "Royal" Show at Preston when he had a most enthusiastic reception. As in other cases he "did" the Show most thoroughly, inspecting minutely the various details, including the working dairy and the parade of horses. Later on he attended the general meeting, and returned the day after to see the parade of prize cattle, and also the parade of sheep, with all of which he seemed very well pleased.

The next year—1886—His Royal Highness, having previously inspected the preparations, visited the Implement Yard and Working Dairy at the Show at Norwich on three occasions, and was pleased "to express his appreciation of the machinery brought under his notice and to make a practical test of the butter and soft cheese produced at the Dairy." He also arranged for the special reception of a large number of Colonial and Indian representatives who were in this country, and who attended the Show on the Wednesday. During this year the Prince attended several times at the Council Meetings, speaking on different subjects

and on one occasion urging on all the members who could do so to visit the Colonial Exhibition then in progress, and suggesting inviting the Colonial and Indian visitors to go on the Woburn excursion and to the Show at Norwich.

In the succeeding years we find His Royal Highness keeping up his active association with the Society, but in the year 1888, the death of the Emperor Frederick prevented the Prince from attending the Show at Nottingham as he had intended. In 1889 at the Windsor Show, His Royal Highness took a great part in welcoming the Society in its jubilee year, when Queen Victoria was President, and he presided at the annual meeting of Governors and Members held in the large tent at the Show, and made a speech as Acting President. On this occasion, gold medals specially struck were presented on behalf of the Society to Her Majesty and the Prince of Wales by the Duke of Richmond. On the Thursday, Her late Majesty Queen Victoria visited the Exhibition, and the Prince presented the Members of Council and Officers of the Society to her.

In this same year the Prince presided at the State Banquet at St. James' Palace to the Council and Chief Officers of the Society, and in replying to the toast of the Queen's health, said that although Her Majesty was far away, yet she took the greatest interest in the Society, and greatly appreciated being President during its Jubilee year. He himself was proud to think that he had been a Governor of it for twenty-five years, and outlined his connection with it since the early age of nine-and-a-half, when he had been taken to the Show at Windsor in 1851. He then proposed "The Royal Agricultural Society of England," giving a general history of it, and mentioning in his speech several of its more distinguished members, as well as referring to the success of the Society, its work, the Journal, its prizes, &c.

Within three weeks of his attendance at the meeting to which we have just referred, we find the Prince, though unable to attend the Society's Council Meeting, had written to the Lord President of the Council, calling attention to the outbreak of foot-and-mouth disease in Germany, thus showing that his active interest in Agriculture was not confined to attendance at the meetings of the Society.

For some time after this, we do not find anything recorded concerning the Prince's connection with the "Royal," but in 1891 he once more attended a Council Meeting held on May 6. On November 4 of this same year, we find that a vote of sympathy with His Royal Highness, on the occasion of the fire at Sandringham, was passed at a Council Meeting. Again, in the next year, the Society showed its sympathy with

the Prince in the sad affliction of the death of his eldest son, the Duke of Clarence. The motion of sympathy, proposed in a feeling speech by the Duke of Richmond, was carried in silence, all the members standing. It was afterwards graciously acknowledged.

Passing now to 1893, we find His Royal Highness again showing himself an active member of the Society. On February 1, at the Council Meeting, he moved a vote of thanks to the Duke of Westminster and Sir Walter Gilbey, who had, in the most public-spirited manner, secured Harewood House for the Society to occupy as its headquarters. On March 1 he attended a meeting convened by the Duke of Westminster to consider the best means of commemorating the completion of the half-century of agricultural experiments carried out by Sir John Lawes at Rothamsted continuously since 1843. On this occasion he spoke at length. This same year (1893), we find him attending the Show at Chester, and proposing a vote of thanks to the Mayor and Corporation of the City for their reception of the Society.

In 1894, he attended the annual country meeting at Cambridge, and was present at the General Meeting in the Showyard at that place. On this occasion, when moving a vote of thanks to the Mayor and Corporation, he mentioned that the last show held there had taken place fifty-four years previously, and that the prizes had then amounted to £900, whereas, at the meeting at which he was speaking, no less a sum than £5,433 was being offered. He concluded by saying that he was glad to re-visit a place where he had once spent a year.

During the next three or four years, the Prince only occasionally attended Council Meetings. He, however, visited the Show at Four Oaks in 1898, and in March, 1899, it was announced that His Royal Highness would accept the Presidency of the Society for the year 1900, "in order to show the great interest which he takes in everything relating to Agriculture." This same year he attended the anniversary General Meeting at the Society's headquarters, at which he was proposed by the Rt. Hon. Walter Long, M.P., Minister for Agriculture, as President for the next year, and on the motion being seconded by Mr. Clare Sewell Read, was elected by acclamation. In accepting the election, the Prince said that he considered it a very high honour, and referred to his long connection with the "Royal." A month later, on being voted to the chair after the Maidstone meeting which he attended, he spoke of his "deep personal interest in the welfare of the Society," and in the course of his speech, thanked the meeting for the hearty way in which they had

elected him. He then gave a sketch of his connection with the "Royal," and recalled the various shows at which he had been present. He concluded by hoping that the next year's show, though not to be held in such a "charmingly picturesque Showyard as Maidstone, might in other respects be equally satisfactory and equally agreeable." (Cheers). Then there comes another interval of some eighteen months, during which the Prince attended some of the meetings of the Council, but during which no event of special interest occurred. On February 7, 1900, however, when he took the chair at the monthly meeting, he spoke at length on the Duke of Westminster's death. He recalled especially the fact referred to above, that it was to him and to Sir Walter Gilbey that the Society owed the possession of the house in which they were meeting. He paid a high tribute to the late Duke's character.

On June 19, when the Prince as President was in the chair at the General Meeting held in the Showyard at York, the Right Hon. Walter Long, M.P., Minister for Agriculture, proposed "that the grateful thanks of the Society be dutifully tendered to H.R.H. the Prince of Wales, K.G., for his services as President during the past year," and referred to the attack made on the Prince by the miscreant Sipido in Belgium. His Royal Highness, in reply, made a long speech in which he referred to his constant interest in the welfare of the Society of which he had then been a member for thirty-six years. He said he had had a splendid view of the Show, which he hoped to re-visit on the next day but one. After referring to his firm belief in the fact that much of the progress to be observed in British Agriculture was due to the "Royal," he ended by "thanking his colleagues on the Council, and the various officers of the Society, as well as the members generally, for their valuable support" during his year of office, and by saying how grateful the Royal Family and he himself were to the agriculturists of England for the loyal attachment to the Throne which had always characterised them.

When the lamented death of Queen Victoria occurred, the President (Earl Cawdor) and the Council, as representing the Society generally, sent an address of condolence to His Majesty King Edward VII., and asked the favour of his continued patronage in the future. The address ended with a prayer for His Majesty's long tenure of the exalted position to which he had been called. This loyal address was, in due course, acknowledged by the Secretary of State at the King's command.

At the monthly Council on April 3, 1901, the President announced that in answer to the humble petition which had

been presented to the King on behalf of the Society, Sir Dighton Probyn, Keeper of His Majesty's Privy Purse, had written to convey the King's acceptance of the position of Patron of the Royal Agricultural Society. Anticipating the Society's wishes, the President had already written to the Keeper of the Privy Purse requesting him to "submit to the King the dutiful and grateful thanks of the Council and members of the Society for this further mark of His Majesty's favour to it."

On June 6 Sir Dighton Probyn again wrote at His Majesty's command to say that the King had taken the greatest interest in the negotiations for the proposed acquisition of a permanent showyard by the Society, and promising a subscription of two hundred and fifty guineas. His letter mentions that "although His Majesty is no longer able to continue to take the active part in the management of the Society which he has hitherto done, having four times been President, and for twenty-two years a Trustee, still His Majesty will never cease to take the greatest interest in its welfare, and it will be a source of great pleasure to him to learn that the £30,000 required for the purchase of the site may soon be forthcoming."

On July 8, 1902, at the General Meeting in the Showyard at Carlisle, the President, Prince Christian of Schleswig-Holstein, was able to announce that a bulletin had been received from the physicians to the King, who had been so seriously ill, saying that His Majesty's progress was all that could be desired. He proposed, and it was carried by acclamation, that a telegram be sent to the King conveying the loyal and sincere sympathy of the Society with him in his recent illness, and with the Queen and Royal Family in their deep anxiety. The message ended with an expression of gratitude for his recovery, and a prayer for his complete restoration to health. This was immediately done, and, in reply, a message of thanks was received from the Queen.

In 1903 the King, accompanied by the Queen, visited the Society's Show at Park Royal, on which occasion he planted a commemorative oak tree in front of the Royal Pavilion, and subsequently a letter was sent by the King's command conveying his thanks "to all concerned for the excellent arrangements which were made for the reception of their Majesties at Park Royal." On this occasion our present King, then Prince of Wales, was President of the Society, and was in the chair at the meeting when this gracious message was received.

On April 1, 1905, His Majesty in Council was graciously pleased to grant a new charter to the Society under which new bye-laws for the election of Members of Council and for the

holding of General Meetings were drafted. In February, 1906, at a Monthly Council Meeting, the President, Mr. Cornwallis, proposed, and Prince Christian of Schleswig-Holstein seconded, a resolution of condolence with the King and Queen on the occasion of the death of the King of Denmark, and proposed to record the Council's "deep sense of sorrow." The resolution was unanimously carried in silence, all standing. On June 28, of the same year, the King, accompanied by the Duke of Devonshire, Lord High Steward of the Borough, visited the Society's Show at Derby. He was received by the President (Mr. Cornwallis), and the members of Council of the Society, with whom he lunched after visiting various departments of the Show, and inspecting army veterans of the Nottinghamshire and Derbyshire Veteran Societies.

King Edward visited the Lincoln Show in 1907, together with the Grand Duke of Hesse, and inspected various objects of interest in the Showyard, including the splendid horticultural exhibition arranged by the Local Committee. At both this Show and at the one held two years later at Gloucester, the King had arranged for his Indian Orderly Officers to attend.

His Majesty's next visit to a Show of the Society was on Wednesday, June 23, 1909, at Gloucester, and this was, unfortunately, to be his last. Speaking at the meeting next day, the President (the Earl of Jersey) said that the King's visit had given "great pleasure and satisfaction to everyone connected with Agriculture. That visit was a further proof, not only of his Majesty's interest in every part of his dominions, but of his great interest in Agriculture, and of the leading part he took in it. His Majesty set an example to everyone as to how success could be gained, and never failed to take an interest in the animals which he exhibited, as was exemplified on the previous day, when he went round and looked at his prize animals."

Although five short months of the year 1910 had not been completed before the Royal demise occurred, Edward VII. had another special and signal mark of favour to confer upon the Society.

It is obvious that, with all the many urgent calls upon a monarch's time, it would be impossible for all the affairs of a great Kingdom and a vast Empire to be carried on, did the King devote to any particular body of his subjects more than their fair share of his Royal favour. Nevertheless, when it was decided to hold the Society's Show for 1911 in Norwich, the capital of the county in which the King had lived so long, and where he had passed many of the hours which he had found it possible to devote to his private affairs,

his Majesty would not refuse the urgent solicitations of some members of the Council to favour the Society once more with his active Patronage on this occasion, and at a Council meeting, the President (Sir Gilbert Greenall) was able to announce that the King had graciously given his consent to be nominated as President for the year 1911.

An Almighty Providence having ruled that death was to frustrate the hopes of both King and People, it only remains to remember with gratitude that up to the very last the late beloved Monarch was ready and anxious to do all that lay within his power to advance the great industry which he so often patronised and assisted by his kindly efforts to forward the work of his Royal Agricultural Society of England.

K. J. J. MACKENZIE,
Editor.

Cambridge,
December, 1910.

NOTE.—The frontispiece to this volume appears by permission of Arthur Cadbury-Jones, Ltd., 22-24 Glasshouse Street, London, W., the owners of the copyright and the publishers of the engraving.

THOS. McROW,
Secretary.

THE PRODUCTION OF PLANT FOOD IN THE SOIL.

BY EDWARD J. RUSSELL, D.Sc. (Lond.),
*Goldsmith Company's Soil Chemist, Rothamsted Experiment
Station.*

THERE is a time in the history of a new subject when it may usefully emerge from the laboratory and be placed before the practical man, not because it is yet ripe for application in practice, but in order that it may be tested and extended by any facts or observations he may bring forward. In return the practical man, being put in possession of recent ideas, has his outlook broadened and is in a better position for working out his own problems. The study of the production of plant food in the soil has reached this stage. It has made great advances during the past few years, and has recently developed in certain new directions.

In all permanent systems of cultivation arrangements are made for supplying organic matter to the soil. It may be given as dung, by sheeping, or by ploughing in either a green crop or the mass of roots accumulating in a ley of

longer or shorter duration, but it must be added in some form or other if the soil is to be worked indefinitely at a profit. This organic matter is one source from which non-leguminous plants obtain their nitrogenous food; it is not, however, the actual food, but the raw material out of which the real food, ammonia and nitrates, is made. For long the process of manufacture was thought to be chemical; this was Liebig's view, and was held from 1840 for many years. But advances in other branches of science, and particularly in bacteriology, were slowly making this view untenable. During the sixties and seventies bacteria were shown to be the cause of putrefaction, decay, and other similar changes; they were shown further to produce disease and to be almost universally distributed. And so when in 1877 Schloesing and Muntz discovered that nitrification, the last stage of the decomposition process in the soil, was also the work of bacteria, the scientific world was ready for the discovery, and gave due heed to it. Before long the work of A. Koch and others on the Continent had shown that other parts of the process were brought about by bacteria, and had thus broken down the old chemical view. Bacteria now stood revealed as the makers of plant food in the soil.

These new ideas were introduced into Great Britain by Warington, and were much developed by him. In one of his papers in 1883 he sets out the changes brought about by micro-organisms in the soil as follows: the organic matter is broken down, giving off much carbonic acid and leaving a residue richer in nitrogen; this also decomposes, giving rise first to ammonia, then to nitrates. Subsequent work has fully confirmed the accuracy of these views, and has revealed the broad outlines of the changes taking place.

The organic matter ploughed into the soil—whether it be dung, stubble, or ley—is attacked by insects, worms, moulds, fungi, and bacteria, and changed into a number of products. The most prominent is humus, the black, structureless material playing so important a part in getting a tilth that it is often, and not wholly incorrectly, regarded as the chief source of fertility. But the humus does not account for the whole of the organic matter added; part is dissipated as carbonic acid gas and water vapour, part is changed into soluble substances that appear in drainage water or in shallow well water, while part remains as non-humic material in the soil. Oxygen is wanted during the process, and is absorbed in quantity from the air, hence the necessity for sufficiently aerating the soil.

Turning now from a consideration of the whole of the organic matter to one of its constituents: the nitrogen undergoes several transformations, but after a time appears in four

forms—(1) in the humus, (2) in the non-humic part, (3) as ammonia, (4) as gaseous nitrogen. The relative amounts of ammonia and of gaseous nitrogen depend on the conditions. If the soil is very rich in organic matter a great deal of free nitrogen is given off; thus on the Rothamsted plots receiving 1½ tons of dung annually no less than half of the added nitrogen is lost as gas; while rich prairie soils, when first broken up, suffer heavy losses of this element. From the cultivator's point of view this part of the process is sheer waste; it sets a limit to the richness of arable soils and to the usefulness of heavy dressings of dung. On the other hand, if the soil is poorer in organic matter, containing only those quantities present in ordinary arable land, a smaller proportion of the nitrogen is lost and more of it appears as ammonia. On the Rothamsted plots receiving dung once in four years nearly 70 per cent. of the nitrogen passes through the ammonia stage.

Ammonia, however, does not remain as such in the soil. The instant it is formed it is attacked by certain bacteria and changed into nitrites, which in turn are attacked by other bacteria and changed to nitrates. This last is the most rapid in the whole chain of processes; the formation of nitrite is also quicker than that of ammonia: hence we never find nitrites or anything more than a trace of ammonia in ordinary soils. One of the steps previous to the ammonia stage takes place more slowly, and so sets a limit to the speed of the whole series of changes.

There is another important process quite distinct from the breaking down of organic matter, although closely associated with it. Certain bacteria have the power of absorbing gaseous nitrogen and using it as food. This is the most mysterious process of all, and cannot by any artificial means be reproduced under soil conditions. Some of the organisms are associated with leguminous plants and cause part of the enrichment of the soil produced by the growth of clover, tares, &c. Others can work on their own account in the soil provided there is an ample supply of organic matter of the right kind, and these probably contribute to the gain in nitrogen in arable land laid down to grass.

The importance of these changes in promoting soil fertility is obvious. The ley, the stubble, and a large part of the dung ploughed in are themselves of no use as plant food, nor do they help to make a tilth. They open up the soil, which may be an advantage in some cases, but by no means always. But the humus to which they give rise is always valuable; it binds a loose soil, lightens a heavy one, and increases the power of holding water. The ammonia and nitrates produced by the micro-organisms furnish the nitrogenous food for

plants. Under normal field conditions nitrate production or "nitrification" is so rapid that the plant probably gets all its nitrogen as nitrate. But this is by no means essential; soils go on producing crops even after nitrification has been artificially stopped and only ammonia production allowed to continue. There is, in fact, something to be said against the conversion of ammonia into nitrates, since the latter readily wash out of the soil while the former do not. On the other hand, ammonia is less effective as a food, giving a smaller increase of crop for every pound of nitrogen assimilated than nitrates would do.

The changes brought about in the soil by micro-organisms may be summed up, so far as fertility is concerned, in the statement that comparatively useless material is changed into valuable humus, ammonia, and nitrate, with a certain amount of waste. The quicker these changes go on the more productive is the soil. Thus we arrive at an important conclusion, the *raison d'être* of soil bacteriology as an agricultural study: the quicker the useful micro-organisms work, the greater becomes the productiveness of the soil; anything that promotes their activity increases productiveness, and anything that retards their activity lessens productiveness. On purely practical grounds, then, we can justify the study of soil micro-organisms. If more were known about them it should become possible not only to increase their activity but perhaps even to control them and thus to increase their efficiency as plant food makers. As Hall has pointed out, the full benefit of a dressing of dung is never obtained in practice, but if only a small part of the waste could be avoided the saving in the aggregate would be enormous.

As yet our knowledge of the soil micro-organisms is far from complete, and we can form only a very dim and hazy picture of what they are actually doing in the top six inches or so of earth in which they dwell. Unfortunately the difficulty of working with soil under the microscope is so great that no one has actually been able to watch them there, and so recourse is had to indirect methods of study. If a little soil is put into water containing suitable food stuffs the organisms multiply so quickly that they can be seen in drops of the liquid mounted under a microscope, or they can be studied by chemical methods. A great deal has been learned in this way, but some skill is needed in applying the knowledge thus gained to actual soil conditions for one very important reason. Many of the micro-organisms can live in two states; as active forms, feeding, growing, multiplying, and bringing about their appointed changes in the soil materials, or as "spore" forms, not unlike seeds, in which their vitality seems to be suspended

so that they need neither food, air, water, nor warmth, but can survive treatment that would kill any active form. The change from one to the other is fairly rapid, and can take place as often as necessary; directly food or water conditions become unfavourable to the active forms they change into spores, but when the conditions again become favourable the spores can blossom out once more as active forms. It is by no means a simple matter to decide whether a particular organism known to be present in the soil is there in an active or a spore form. But in spite of this difficulty something has been learned about the life in the soil, and a very wonderful story it promises to be.

Among the inhabitants of the top six inches of soil are bacteria varying in length from $\frac{1}{1000}$ to $\frac{1}{100}$ inch, fungi and moulds which are larger than this, algae, and, as we shall see shortly, protozoa; the first four are all members of the vegetable, and the last of the animal, kingdom. There are also larger and more organised animals like eel-worms, &c. The numbers of the micro-organisms are enormous: of bacteria alone in active and spore forms there are from four to ten millions per gram of soil—a gram is about $\frac{1}{16}$ of an ounce, and is roughly a salt-spoonful—while no method of counting the other organisms has yet been devised. The active forms are all competing for food, and we can imagine that the struggle for existence is very severe, but the power of transformation into spores is a great advantage, saving many kinds from destruction. In the struggle no one species exterminates the rest; just as elsewhere under natural conditions a great number of sorts have a chance of survival, so in the soil we find a highly mixed flora and fauna. It would be a mistake, however, to suppose that they are all there expressly for the purpose of making plant food for our benefit. On the contrary they are living their own lives just as are the animals in an uninhabited country. Some of them, it is true, are useful to us, others are not. Some actually use up or destroy the plant food that has already been made, while others, as we shall see later on, are injurious to the useful food-making organisms. Indeed the top six inches of soil might almost be called a separate world, so vast is the number and variety of its inhabitants, and if a man could project himself into it and see what was going on he would have such a tale to tell as would put to shame our most imaginative writers of romance.

More prosaic methods, however, have to be adopted in the laboratory. One that has proved useful is the measurement of the rate at which oxygen is taken up from the air by the micro-organisms of the soil. They require oxygen not only for their breathing, but also for some of the decompositions

they effect. Experiments carried out by the writer showed that fertile soils absorbed oxygen more rapidly than less fertile soils, indicating a greater amount of bacterial activity. Increased warmth, food, and water supply up to a certain point all caused increased oxygen absorption, *i.e.*, bacterial activity; addition of lime was also effective. All of these factors cause increases in productiveness. And so we are brought back to our fundamental principle that the more work the micro-organisms do the greater is the productive power of the soil.

What would happen if all the micro-organisms were killed we do not know, because no one has ever succeeded in killing both the active and the spore forms without adopting such drastic measures that the soil itself is profoundly altered. But a very remarkable result follows such mild methods of treatment as kill the active forms, but not the spores, and at the same time do not much alter the soil. When, for example, the early soil bacteriologists heated their soils to 212°F. to effect sterilisation, they observed that the productiveness was increased. This might have been explained as the result of a chemical decomposition, but no such simple explanation could be given for another fact that had been recorded. For fifty years or more the French vine-growers, and following them the Italian vine-growers, have been in the habit of injecting carbon disulphide into the soil to kill phylloxera, and they observed that the fertility of the soil was thereby *increased*. Now, carbon disulphide not only supplies no plant food but it actually kills the micro-organisms, and the problem arose—If micro-organisms play so important a part in soil fertility, why should it be a good thing to kill some of them? The difficulty was put a stage further back when Hiltner and Stormer made the remarkable discovery that the numbers of bacteria first fall, but then increase enormously in soils that have been treated with carbon disulphide. Approaching the subject from quite a different standpoint, Dr. Darbishire and the writer found that treatment of the soil with toluol, chloroform, carbon disulphide, or other volatile antiseptics,¹ or heating to 212° F., led to an increased oxygen absorption, and therefore bacterial activity. All of these methods of treatment increased also the productiveness of the soil. Thus in one experiment the heated soil produced 53 per cent. more crop, while soils treated with antiseptics gave from 16 to 38 per cent. more crop than untreated soils. Crop increases of the same order have been obtained in numerous other experiments.

¹ The treatment consisted in adding 2 to 4 parts of antiseptic to every 1,000 parts of soil, leaving it to act for a day or so, and then spreading out the soil till the antiseptic had all evaporated. Toluol is an oil obtained from coal-tar and is very much like benzene.

	Un treated soil	Heated soil	Un- treated soil	Soil treated with—		
				Carbon Disul- phide	Toluol	Chloro- form
Oxygen absorbed	100	215	100	151	157	118
Weight of crop pro- duced	100 (Mustard)	153	100	128 (Buck wheat)	116	138

The part played by bacteria was very evident when the crops were analysed so as to furnish information as to the quantities of plant food present in the different soils. In all cases the partially sterilised soils contained more plant food than the untreated soil, an observation fully in accordance with the observed increases in bacterial activity; the results are shown in diagram form in Fig. 1. All these results point to one conclusion; when a soil has been partially sterilised, *i.e.*, treated so that the active forms *but not the spores* of the

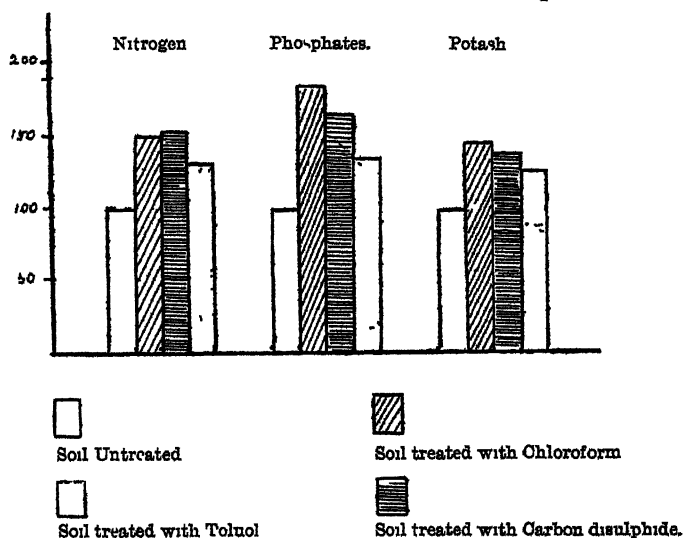


FIG. 1.—Relative amounts of plant food taken by buckwheat from variously treated soils

micro-organisms are killed, then the new population arising from the spores is more numerous and more active than the old one.

This conclusion was followed up by Dr. Hutchinson and the writer in an investigation of the changes brought about by

partial sterilisation. For a day or so after the soil had been treated very little happened, then there was a rapid increase in the amount of ammonia and in the numbers of bacteria; the nitrates, however, did not increase in the partially sterilised soil, and only to a comparatively small extent in the untreated soil. The results of one experiment are given below :—

	Nitrogen present as ammonia in one million parts of soil					Nitrogen present as nitrate in one million parts of soil		Nitrogen present as ammonia and nitrate in one million parts of soil		
	At beginning	After 2 days	After 4 days	After 6 days	After 20 days	At beginning	After 20 days	At beginning	After 20 days	Gain in 20 days
Untreated soil	18	20	22	25	17	12	16	138	177	39
Soil heated to 209° F	65	75	97	181	438	13	12	195	158	363
Soil treated with toluol which afterwards evaporated away	50	89	200	221	278	12	12	170	398	228

In the twenty-three days of the experiment there had been 36.3 parts of nitrogenous plant food made in the heated soil, and 22.8 parts in the soil treated with toluol, but only 3.9 parts in the untreated soil.

This is set out as a curve in Fig. 2. Another experiment may be quoted, showing the enormous increase in the numbers of bacteria after the first effect of the poison has passed off :—

	Number in millions of bacteria per gram of dry soil			
	At beginning	After 10 days	After 38 days	Gain in 38 days
Untreated soil ...	4.2	10.6	13.8	9.6
Soil heated to 209° F ...	Very few	7.4	17.6	17.6
Soil treated with toluol which afterwards evaporated away	1.3	31.7	38.2	36.9

The next step was to discover the cause of the increase in amount of ammonia in the partially sterilised soils. This might be due to an increased production of ammonia, or to the destruction of some agent in the untreated soil, other than nitrifying organisms, that consume ammonia. The second supposition fell to the ground, because when small quantities of ammonium salts were added to untreated soils the whole of the added nitrogen was recovered as ammonia and nitrate. Hence we must conclude that the treatment has induced an

increased *production* of ammonia. Further, the evidence all goes to show that this increased production is the result of the increased numbers of bacteria. Thus the curves in Fig. 2 are of the type associated with bacterial rather than chemical change, and in any case all the antiseptic has gone before the experiment began. Soil which has been *completely* sterilised by heating to 260° F—at which temperature spores as well

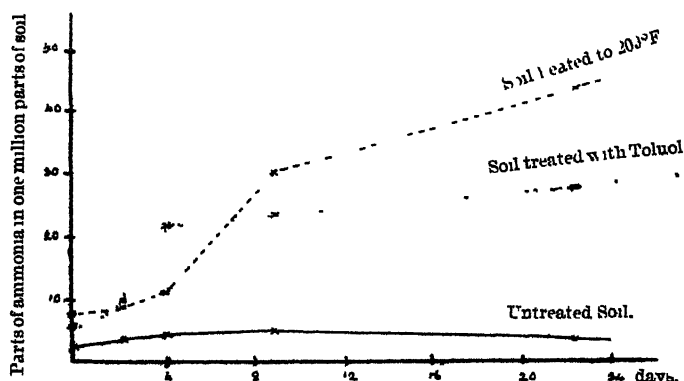


FIG. 2.—Curve showing the rate at which ammonia is formed in partially sterilised soils

as active forms are killed—shows no increase in ammonia content when it is kept, nor is there any such increase if a little toluol is left in the soil, or if the water supply is insufficient for bacterial needs. And so the problem reduces itself to finding why the new bacteria can bring about so much more decomposition than the old.

At first it was thought that partial sterilisation killed all the weaker races, leaving only the stronger, which multiplied vigorously when they had the field to themselves. But this explanation broke down when it was found that the new races were individually less potent than the old. Nor were the new races more efficient in making plant food by reason of the grouping of the species or the type of the flora. They were, indeed, less efficient, and when some of the old bacteria were added to the partially sterilised soil—as was done by inoculating with some of the original soil—there was a marked increase not only in numbers of bacteria but also in the amount of decomposition effected.

Therefore we are driven to the conclusion that the extra plant food produced by the new races is due simply to their increased numbers, and we have now to find why they can multiply so rapidly in the partially sterilised soil even though they have been rather weakened by the sterilisation treatment.

	Millions of bacteria in one gram of soil			Ammonia and nitrate present in one million parts of soil		
	At beginning	After 39 days	After 101 days	At beginning	After 39 days	After 101 days
Partially sterilised soil	2	43	41	10.7	25.7	34.8
" " + 0.5 per cent of original soil	2	59.6	70.6	10.7	26.7	42.6

	At beginning	After 20 days	After 61 days	At beginning	After 61 days	Gain
Partially sterilised soil	2.5	28	60	24.8	49.1	24.3
" " + water extract containing bacteria from original soil	2.5	61.3	166.6	28.0	71.7	43.7

A clue is furnished by the experiment just quoted, which shows that the organisms of the untreated soil can multiply much more rapidly, and effect more decomposition, in the partially sterilised soil than in their own soil. This proves that the partially sterilised soil is a better dwelling place for bacteria than the original soil was; it shows—and this was supported by other experiments which I need not set out—that the original soil contains something detrimental to bacteria which is put out of action by heat or by antiseptics. This "something" was not a chemical, for it was found to be capable of growth; thus when 5 per cent. of the original soil was added to partially sterilised soil there was at first a rise in bacterial numbers, due to the invasion of the unweakened stocks, but then a fall, showing that the injurious factor had begun to manifest itself. Thus it grows, but not so quickly as bacteria. It cannot pass through a filter and does not appear in the water extract of the untreated soil, although bacteria do, as a previous experiment has shown. It is therefore larger than bacteria. It is killed by drying the soil for a long time but not for a few hours; it is killed by long exposure of the soil to hot sunshine, or by heating for an hour at 122° F., but not at 110° F., and it never revives, but only reappears when some of the untreated soil is added. A number of poisons also kill it. When soil is treated by any of these methods there is a gain in bacterial numbers, in the amount of plant food made, and in the crop-producing power. On the other hand, the injurious factor is favoured by dampness and organic matter, conditions which obtain on sewage farms or in certain greenhouses.

Now a certain class of organisms known as protozoa possess all these properties. Protozoa are the simplest members of the animal kingdom, and are so small that they can only be seen under the microscope. Like bacteria they can exist in active and in resting forms, the latter, known as cysts, are, however, much more easily killed than spores. They are widely distributed in ditches, ponds, and on vegetable matter, but their presence in soils had not previously been suspected and no one seems to have looked for them. An examination of the untreated soil showed that they were invariably present in considerable variety; Dr. Hutchinson found a good number straight off, and over two dozen sorts have so far been found and are under investigation by Mr. Goodey. In the partially sterilised soils, however, one small kind only could be found, all the rest, including the cysts, having been killed by the treatment. So far it has proved difficult to determine which of the protozoa in the untreated soil occur as cysts and which as active forms, but experiments in culture solutions have shown that some of the active forms are very detrimental to bacteria; some actually feed on bacteria, some can surround the particles of organic matter and thus keep off bacteria, and, as they are about a thousand times the size of bacteria, they must all be severe competitors in the struggle for existence. Further, they possess all the properties of the injurious factor as given above.

There may also be other large organisms in the untreated soil harmful to bacteria.

We have then these two sets of facts definitely established by experiment. Soil contains something detrimental to bacteria, capable of growth and therefore presumably living, and possessing other definite properties. It also contains protozoa, and possibly other large organisms, possessing all these properties and detrimental to bacteria. It is reasonable to connect these two sets of facts and conclude that the protozoa are the injurious agents in the soil. This conclusion, of course, is not a definitely established fact like the others; it is, indeed, simply an hypothesis, but we can accept it as true until it is disproved because the evidence in its favour is strong and becomes stronger as the work progresses.

Thus a little more light has been thrown on the life in the soil, and we can penetrate a little deeper into the mysteries of the world beneath our feet. Besides the useful bacteria that break down the organic matter and make plant food, we now have evidence of another class of organisms many times larger than bacteria, and detrimental to them in several ways, either devouring them, keeping them from their food, or competing generally in the struggle for existence.

The bacteria, however, have the great advantage that the soil conditions are, on the whole, more favourable to them than to their enemies, and, as they have a remarkable power of multiplying, they can keep their numbers up. Beyond a certain limit, however, they cannot go because of the harmful organisms; we can thus explain the well-known fact that the numbers of bacteria in soils are lower than would be expected and never rise beyond a certain amount under natural conditions. If now the soil is heated, or treated with volatile antiseptics, or dried for a long time under proper conditions, or treated in certain other ways, the destructive organisms, being the more sensitive, are killed. Many if not all the active forms of the bacteria are also killed, but not the spores, and these soon give rise to a bacterial flora which, being freed from their enemies, can multiply to an extent previously impossible, and can make more plant food, thus increasing the productive power of the soil in spite of the fact that the partial sterilisation process has rather weakened them.

Sooner or later all the results of scientific investigations in agriculture must find a place somewhere in practice, and already this new work has offered satisfactory explanations of phenomena long recognised by the cultivator of the soil, but hitherto inexplicable. It has been known from time immemorial that heating the soil improved its productive power. Virgil records the fact in the following lines in his *Georgics*, written nearly two thousand years ago: "Often, too, it has proved good to burn barren fields, and to set fire to the stubbles with crackling flames. Either the soil thus acquires some hidden strength and rich nourishment, or else every fault is baked out of it and the useless moisture sweats out, or the heat opens up passages and hidden pores by which the juices find their way into the young shoots, or else heat strengthens the soil and contracts the gaping cracks*lest the penetrating showers should harm them, or the fierce power of the scorching sun or the searching cold of the north wind should sear them." (Book 1, lines 84 *et seq.*)

Heating the soil is to this day practised by the natives of India. In the rice-growing districts of Bombay a layer of grass, branches, or, best of all, a plaster made of cow dung and chopped straw is spread on the soil and slowly burnt before the monsoon; this is a regular practice and is known as *rab*.¹ It is mentioned in some of the ancient literature of

¹ F Fletcher. *Nature*, April, 1910, page 156 Mr. Fletcher shows that the effect is neither to supply plant food from the ashes nor to improve the physical condition of the soil

India ; Mr. Francis renders a passage in the *Stories of Buddha's former births*, as follows :—

“ Like to a tender plant whose roots are fed
On soil o'er which devouring flames have spread.”

A similar practice prevails in other parts of India, in Ceylon, and Malaya.¹ It is also known in the West Indies ; in Trinidad a small cultivator will rent a piece of derelict land, burn the bush in the dry season, and plant with maize followed by cassava, yams, &c.² The soil is not enriched with organic matter during this period and consequently is soon exhausted and is then allowed to run to waste. It speedily becomes covered with bush, and, as nothing is removed, organic matter accumulates, so that after a time it can once more be burnt clear and cultivated. On the mainland also the practice is known ; in the grazing districts of Colombia the bush is periodically burnt, and the new crop of grass that comes on, although weak at first, as might be expected, becomes after a time very heavy, dark, and succulent, and will carry more cattle than before,³ besides being free from ticks, snakes, &c. Turning to another continent, the beneficial effect of burning the scrub or the stubbles is well recognised in South Australia, and has been shown not to be due to the ashes.⁴ In our own country it is commonly observed that crops are darker and better on places where heaps of stubble or weeds have been burned than on the surrounding ground. Paring and burning was, until comparatively recent times, a regular part of the husbandry of certain districts of the British Islands.

Wherever these practices have come under the notice of chemists they have been condemned because of the waste of organic matter and of nitrogen involved, but it is now clear that there is another side to the question. Heating kills the harmful factor and gives the useful bacteria full scope for their activity ; further, it effects a certain amount of decomposition and thus leaves less work for the bacteria to do. What the practical man has to decide is whether this gain is worth the cost of the fuel—the fuel often being valuable soil organic matter.

The economic problem is more straightforward in another case. Large growers under glass are greatly troubled by the accumulation of insect pests in their soils, and by the soils “wearing out” after two or three years and no longer responding sufficiently to manure. The latter phenomenon

¹ J. C. Willis : *Agriculture in the Tropics*.

² C. H. Wright : *Nature*, October, 1910, page 530.

³ I am indebted to Mr. J. M. Vaughan for these facts.

⁴ Herbert : *Journal of Agriculture of South Australia*, 1910 ; April, page 791, and June, page 967, also Grasby, *West Australian*, Nov. 3, 1910.

is now readily explicable; we may suppose that the moisture, the warmth, and the soluble organic matter in the greenhouse soil are favourable to the harmful organisms *e.g.* the protozoa, which, after a time, become so numerous that they prevent the bacteria from making plant food sufficiently rapidly for the grower's purpose. In order



FIG 3.—Buckwheat growing on poor soil without manure. *a*, soil heated to 212° F.; *b*, untreated soil. (Russell & Darbishire, *Journal of Agricultural Science*, Vol 2, page 305)

to kill the insect pests the practice arose in America of heating the soil by blowing in steam, or by other means; before long it was observed that the crop-producing power had been increased.¹ This practice has been introduced into England

¹ See, for instance, Stone and Smith, Massachusetts Experiment Station Report, 1898 and 1903.

and is finding increased favour among practical men ; many details have, however, to be worked out and many difficulties overcome. It is not yet known how the heating should be done to kill effectively all pests. Again, Pickering¹ has shown that germination is retarded in heated soils because of the production of a toxic substance. Dyer records that certain growers who rely on the fermentation of the added manure to keep up their soil temperatures are placed in this difficulty when they heat their soils : if they add the usual amount of

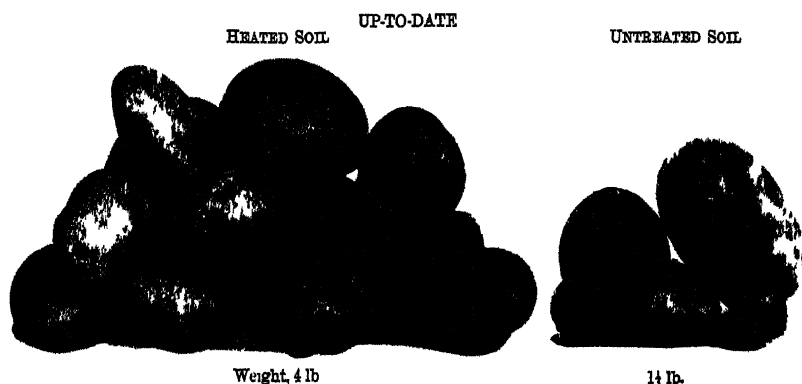


FIG. 4.—Potatoes grown in heated soil and in untreated soil. University of Leeds Agricultural Department. Bulletin No 70

manure the crop becomes over rank ; if they add any less they do not get up a sufficient soil temperature. None of these difficulties is insuperable, and they are all under investigation. The kind of effect produced is seen in the photographs in Figs. 3 to 7.

Tropical sunshine has much the same effect on the soil as heat. "It has been the practice of the ryots for centuries past," write Mr. and Mrs. Howard,² "to expose the alluvial soils of the plains of India to the intense heat and light of the Indian hot weather in April and May. The beneficial effect on the succeeding crop is extraordinary, and has all the effect of a nitrogenous manuring." It appears that the soil temperature rises to 105° F.—125° F. or even higher ; the drying also is no doubt very thorough. Considering the length of the exposure to sunshine, either the heat or the drying could kill the injurious factor even if the direct sunlight had no effect. Something of the same sort has been observed after

¹ *Journal of Agricultural Science.*

² *Nature*, February, 1910, page 456.

a summer fallow in temperate climates when the summer has been very dry.

Low temperatures also seem to be beneficial. The soil in parts of Canada and the United States is frozen hard through-



FIG 5—Tobacco. Soils heated to various temperatures for a short time. From left to right the temperatures were 60°, 140°, 176°, 212°, 257°, and 302° F. (S U Pickering, *Journal of Agricultural Science*, 1910, Vol 3, page 277.)

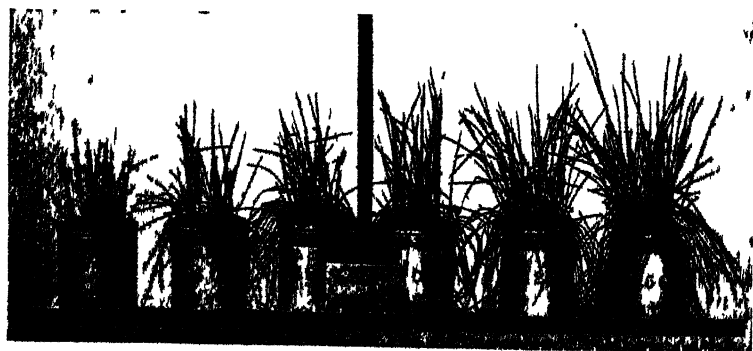


FIG 6—*Festuca pratensis*. Soils heated as in FIG 5. (S U Pickering, *ibid.*)

out the winter; when spring comes there is an extraordinary rush of plant growth. Conn has recently shown that the newly thawed soils are unusually rich in bacteria. The low temperature appears to kill many of the injurious organisms

and thus leaves the bacteria free for a time to multiply and to make plant food.

Turning now to the effect of volatile antiseptics on the soils, the phenomena observed by practical men can be accounted for without difficulty. As already mentioned, vine growers have for over fifty years injected carbon disulphide



FIG 7—Wheat growing on poor soil without manure a, soil heated to 212° F; b, untreated soil c, soil treated with toluol (Russell and Hutchinson, *Journal of Agricultural Science*, 1909 Vol 3, page 111)

into their soils to kill phylloxera. So successful was the treatment that it became very widespread; it is recorded that in 1873 over 200,000 acres were receiving carbon disulphide. The introduction of American stocks for grafting got over the difficulty in a cheaper manner, and the practice has steadily declined; it is, however, still followed to some extent

in the Bordeaux, Champagne, and Bourgogne districts where high-class varieties are grown, and also in Sicily. Rather more than half an ounce per square yard is used to keep the pest in check,¹ but six to eight ounces are needed for the *traitement d'extinction* still practised in Algeria and Switzerland.² It has long been observed that the treatment increases the productiveness of the soil, the carbon disulphide, especially in the larger doses, having all the effect of a nitrogenous manure. Two Italians, Gavazza and Vassallo, put this on record in 1884, but the first statement to attract much attention came ten years later from Oberlin, an Alsatian vine grower. At this period also Girard in France used carbon disulphide to clear a piece of ground on which nematodes had ruined several crops of sugar beet, with the result that, not only were the nematodes killed, but the productiveness of the soil increased. He experimented also with other crops, and on several farms between 1888 and 1892 obtained crop increases varying from 5 to 150 per cent., but usually about 20 to 30 per cent. Similar results are recorded elsewhere with carbon disulphide and also with other antiseptics.

These observations are readily explained. The antiseptic, like heat, kills the injurious factor, leaving a clear field for the useful bacteria. This particular method of killing may not be practicable in agriculture, but it ought not to be beyond the wit of man to devise one that is. Indeed there seems some prospect of something of the kind being done in certain special branches of horticulture, &c., and from the experience thus gained a farming method may be evolved. This, however, is not the final problem. Soil investigators are now aiming at a fuller knowledge of the changes going on in the soil and the agents producing these changes, so as to control them and get the most out of the soil and of the organic matter and other manures put into it. For some time to come investigations on the soil must be judged by the extent to which they contribute to this end.

E. J. RUSSELL.

Rothamsted Experimental Station,
Harpenden, Herts.

¹ 200 to 300 kilos per hectare.

² 2,000 to 3,000 kilos per hectare.

TUBERCULOSIS

AS REGARDS HEREDITY IN CAUSATION AND ELIMINATION FROM INFECTED HERDS.

PART I.

THE IMPORTANCE OF HEREDITY IN THE CAUSATION OF TUBERCULOSIS.

BEFORE proceeding to discuss the question whether the hereditary transmission of tuberculosis plays a part of any importance in the dissemination of the disease, it is necessary to draw a clear distinction between the inheritance of the disease itself and the inheritance of a special predisposition to it. When tuberculosis is inherited in the former sense the young animal comes into the world with tubercle bacilli already in its system, these bacilli having been furnished by one or other of the parents. When predisposition only is inherited the young animal is born free from the bacilli, but it possesses by descent the exceptionally low power of resisting infection which characterised its parents. It is to be observed that in this latter case it is not necessary that the parents themselves should be actually tuberculous, for, although specially predisposed, by accident or design they may never have been exposed to any chance of infection.

The belief that tuberculosis is frequently inherited dates from a time when it was not known, and for the most part not even suspected, that the disease was caused by a germ or bacterium, and hence in the first instance it was supposed to be the predisposition or susceptibility that was transmitted from the tuberculous parent to the offspring. At the time here referred to very vague notions were prevalent regarding the actual nature of tuberculous disease, but the greatest importance was assigned to a peculiar weakness of the cells or tissues, in consequence of which inflammations arising from various causes assumed a specially pernicious course, with little or no tendency to recovery, such as they exhibited in ordinary individuals. A fact which everywhere forced itself upon attention was that the disease among human beings often ran in families; and quite naturally, since there was no suspicion that the disease was contagious, this fact was ascribed to the hereditary transmission of the peculiar weakness which was regarded as the main factor in the causation of tuberculosis.

The question, of course, assumed an entirely new aspect when Koch discovered the tubercle bacillus, and proved that the essence of the disease was the introduction of this

organism into the previously healthy body. Koch's researches regarding the characters of the tubercle bacillus may also be said to have made highly probable what has now come to be accepted as a settled fact, viz., that the tubercle bacillus in natural circumstances never multiplies except in the bodies of tuberculous subjects; and from this follows the all-important conclusion that tuberculosis cannot have any other origin than the introduction into the healthy subject of tubercle bacilli derived from an antecedent case of the same disease.

As the special purpose of this article is to examine the evidence bearing on the influence of heredity in the dissemination of tuberculosis in cattle, it is necessary to note here that the belief in the importance of that influence which became common among breeders and veterinary surgeons never had the same justification as the like view regarding the part played by heredity in human tuberculosis. In settled or civilised communities of human beings the tendency of tuberculosis to run in families is always obvious, and every one can quote numerous examples of it which have come under his own observation, but there never has been evidence of like extent to show that tuberculosis is strikingly frequent among the progeny of tuberculous cows or bulls. The fact appears to be that the belief in the importance of heredity in the spread of the bovine disease was in large measure borrowed from human pathology, and was not a view naturally suggested by the observed facts in connection with animal tuberculosis.

INHERITANCE OF THE DISEASE ITSELF, OR CONGENITAL TUBERCULOSIS.

After the discovery of the tubercle bacillus by Koch, the view that inheritance of a special predisposition to the disease was of prime importance for a time declined in favour of the belief that the actual disease was often inherited from a diseased parent. Although, as previously stated, it was the facts observed in connection with the human disease that suggested the importance of heredity in the causation of tuberculosis, the belief that the actual disease was frequently inherited was first disproved, or at least made highly improbable, by observations made regarding the bovine disease.

These observations were made in certain of the large Continental abattoirs, and they showed that the number of cases of tuberculosis encountered among the calves slaughtered within a month of their birth was remarkably low when compared with the number of cases encountered among the cows killed at the same place. Some of the earlier statistics collected in this way appeared to show that not more than one

calf in ten thousand was tuberculous at birth, in places where not less than 5 per cent. of the adult cattle were more or less seriously diseased. These earlier figures are now known to have been untrustworthy, because at that time the search made for tuberculous lesions in slaughter-houses was not very minute or painstaking; but, nevertheless, they made it wholly impossible to believe that the proportion of calves born tuberculous was anything like as large as it ought to have been, on the assumption that tuberculous parents generally handed on the disease to their progeny before the latter were born.

The introduction of more skilled inspection in the German abattoirs, and in particular the custom of paying minute attention to the condition of the principal lymphatic glands of the body, soon caused a notable rise in the proportion of cases of tuberculosis detected both in old animals and in young, and furnished figures that may be accepted as approximately accurate. As an example one may take, almost at random, the statistics published regarding the results of slaughter-house inspection in the kingdom of Saxony in the year 1895.¹ Out of 39,493 cows slaughtered during that year, 12,842, or 32.49 per cent., were tuberculous. The number of bulls slaughtered during the year was 18,149, and of these, 3,811, or 20.99 per cent., were tuberculous. The number of calves slaughtered during the year was 201,643, of which number only 503, or .24 per cent., were found to be tuberculous.

An objection that might be taken to these statistics is that probably some tuberculous calves die or are killed in consequence of their weakly condition within a short time after birth, and as such cases do not find their way into slaughter-houses, and consequently escape inspection, the observations made in the public abattoirs give a lower percentage of tuberculosis among calves than the actual one. This may be admitted, but it cannot be conceded that the number of cases of congenital tuberculosis that thus escape detection is sufficiently large to introduce any important error into the published statistics, such as those just quoted. There are, however, available statistics collected in circumstances that to a large extent enable one to discount this possible source of error. Thus at Kiel, during the period 1895 to 1898, 21,858 calves under a week old were slaughtered, and of these only 138, or .63 per cent., were tuberculous. At Flensburg, from 1899 to 1906, 24,822 calves were slaughtered,

¹ *Bericht über das Veterinärwesen im Königreich Sachsen für das Jahr 1895.*

² Quoted by Klein, *Berliner Tierarzt. Wochenschrift*, Vol. XXVI., page 205.

and 179 of these, or .72 per cent., were diseased. At Schwerin, from 1893 to 1903, 48,449 calves were slaughtered, of which 103, or .21 per cent., were tuberculous.

One might have supposed that in face of the evidence furnished by these slaughter-house statistics the view that any considerable proportion of the progeny of tuberculous cows are infected prior to birth would have been generally abandoned. As a matter of fact, however, imagination has suggested a method of accounting for the rarity of tuberculosis in new-born calves while still maintaining that the direct inheritance of the disease is common and practically important. It is contended that the absence of visible lesions in new-born calves ought never to be accepted as evidence that the young animal is not infected, inasmuch as the tubercle bacilli may be present in what is called a latent condition. Furthermore, it is held that the frequent development of actual tuberculous disease in the progeny of tuberculous parents before the period of adult life is reached harmonises very well with the view that the bacilli are often present in the organs or tissues of new-born animals in which no visible lesions can be detected by the most searching post-mortem examination. It would be quite permissible to reject this view as a pure hypothesis in support of which no evidence has ever been produced. Here, however, it may be well to state other reasons for declining to accept it.

The possibility of latency in tuberculosis must be admitted in the sense that when a tubercle bacillus gains access to any part of the body and starts to multiply, a certain time elapses before the resulting tubercle acquires what may be called naked-eye size. What this period usually is is well known from observations made on animals experimentally infected. Broadly speaking, it is some three or four weeks at the outside. Knowledge of this fact compels one to admit that probably some of the apparently sound calves of tuberculous cows are born infected, the infection having been of too recent a date to permit the development of visible tubercles. This, however, is the only sense in which latency can be admitted, and even when the fullest weight is allowed to it, it cannot be held that the fact seriously invalidates the conclusion based on the proved rarity of visible lesions in new-born calves.

But this is not at all the sense in which it is maintained that tuberculosis is latent in young calves. The view put forward is that owing to some peculiarity of the tissues in such young animals any tubercle bacilli present are restrained from multiplying, and thus lie dormant for months or years, like the seeds of plants kept in circumstances unfavourable for germination. The answer to this contention has been furnished by numerous experiments which show that when

calves are infected with tubercle bacilli within a few days or weeks of their birth, visible disease develops in them with even greater rapidity than in older animals. In reality such experiments are not needed, in view of the admitted fact that extensive tuberculous lesions have in hundreds of cases been found in newly-born calves, although the proportion of calves showing visible lesions at birth is small.

Finally, the theory now being discussed has been absolutely disproved by the evidence accumulated in recent years to show that when calves born of tuberculous cows are promptly removed from their dams and kept under conditions that prevent infection *after* birth, they do not become tuberculous.

It may therefore be accepted as a well-grounded estimate that among the calves born of actually tuberculous cows, on an average not more than one in fifty, and possibly not one in a hundred, inherits the actual disease. As will afterwards be pointed out, account must be taken of the possibility that a new-born calf may be tuberculous, when one is devising measures for the eradication of the disease from a herd, but it cannot be admitted that congenital tuberculosis is to any appreciable extent responsible for the present prevalence of the disease among cattle.

It has already been pointed out that the view that the actual disease is often transmitted from the parent to the unborn progeny was first put forward to explain the fact that in the human species tuberculosis often runs in families, and that the same view was with less justification extended to bovine tuberculosis also. The belief that this method of transmission plays an important rôle in human tuberculosis is no longer held by medical pathologists, and the discredit under which it has fallen is in great measure due to the evidence cited above to prove the comparative rarity of congenital tuberculosis among cattle. But direct evidence of quite the same kind exists to prove that only an insignificant proportion of the children of tuberculous parents are born with the disease in them. The countless opportunities afforded by post-mortem examination of young children have not yet led to the detection of fifty cases of congenital tuberculosis in the human species.

There is not the least mystery regarding the manner in which the disease is contracted during intra-uterine life. The cases in which calves are infected prior to birth are cases in which the womb of the cow is itself the seat of tuberculous disease. When that organ is diseased there is a likelihood that some of the tubercle bacilli in its wall will find their way into the body of the foetus, but as long as the womb remains healthy the foetus is in little or no danger of infection, no

matter how extensive the disease may be in other parts of the cow's body. It is a well-known fact that in advanced cases of tuberculosis in cows the uterus often becomes involved, whereas in the human and other species than the bovine tuberculosis of the uterus is a very rare condition. This affords an explanation of the greater frequency of congenital tuberculosis in the bovine than in the human species.

A point of considerable importance in connection with the alleged frequency of congenital tuberculosis remains to be examined. In what precedes the manner in which the disease is transmitted from the cow to the foetus has been explained, but those who have contended that congenital tuberculosis is common have never admitted that infection is from the female parent only. On the contrary, it has often been held that the disease is quite as likely to be passed on in this way from the father, and some still believe that such transmission plays an important part in the spread of tuberculosis among cattle. Against such a belief it may be pointed out in the first place that it is only by ignoring the fact that tuberculosis is a contagious disease, liable to be contracted at any time after birth, that any one can perceive the least occasion for surmising that tuberculous male parents hand on the actual disease to the foetuses which they beget. A large proportion of the calves got by a particular bull may before they reach maturity be proved to be tuberculous, but since there are in almost every herd opportunities for infection after birth this fact does not in the least justify the conclusion that these animals were born tuberculous, or that the sire was the source of their infection.

But if any cases of congenital tuberculosis among calves are attributable to the bull, they are all included in the something less than 1 per cent. which constitutes the total proportion of calves found by post-mortem examination to be tuberculous at birth. It therefore follows that the slaughter-house statistics previously referred to are conclusive evidence against the view that the transmission of the actual disease from the bull to the foetus is a common occurrence. Furthermore, it has already been shown that when a calf is born tuberculous the fact can generally be accounted for without incriminating the bull, numerous observations making it highly probable that the foetus was infected through having been developed in a tuberculous uterus.

Since it must be held to be proved that if the disease is ever transmitted from the male parent the occurrence is exceedingly rare, the question is now devoid of any practical importance. It may be observed, however, that there is no real evidence to show that the disease is ever transmitted in

this way, but weighty reasons for regarding it as quite impossible, except when the testicles or other parts of the generative apparatus are tuberculous.

THE HEREDITARY TRANSMISSION OF PREDISPOSITION TO TUBERCULOSIS.

As previously explained, belief in the importance of heredity in tuberculosis dates from a time anterior to the discovery of the tubercle bacillus, the original conception being that not the disease itself but a peculiar tissue weakness was handed on from parent to offspring. After the discovery of the tubercle bacillus it was for a time surmised that the organism itself was passed on, but when, for the reasons already stated, that view had to be abandoned, the original conception was revived, and at the present day there are still many (including some eminent medical authorities) who maintain that inheritance of a special susceptibility to infection, or an exceptionally low power of resisting the tubercle bacillus, is a factor of great importance in the causation of tuberculosis. It is held that it is impossible otherwise to account for the tendency of the disease to run in families. The soundness of that conclusion must now be examined.

In the first place it must be observed that there does not appear to be any good reason for maintaining that bovine tuberculosis is a disease which is specially frequent in particular families of any breed of cattle. The disease is undoubtedly more frequent in certain breeds than in others, and the question whether this is in any degree ascribable to difference of predisposition will presently be discussed. But within the same breed the disease does not exhibit any predilection for particular families. One herd may be more tuberculous than another, but it is impossible to trace any connection between the incidence of the disease and pedigree.

Moreover, it is impossible to pretend that the disease is more rife in what are called the pedigree herds of any breed than among the commoner bred animals. The fact is that the belief in the inheritance of special susceptibility in cattle, like the belief in the hereditary transmission of the actual disease, would probably never have obtained currency if medical men had not thought it impossible to account for the observed facts except on the assumption that certain families of human beings are quite specially predisposed to consumption.

The fact which is held to justify that belief in the case of the human species is that consumption is far commoner among the children of consumptive parents than among the children of parents who appear to be free from that disease. But since consumption is now universally admitted to be a

contagious disease it is obvious that this fact may admit of another explanation, viz., that exceptional risks of infection, and not exceptional susceptibility transmitted by parent to offspring, may be at the root of family tuberculosis. In the case of human beings, tuberculous parents, in the immense majority of cases, inhabit the same houses and even the same rooms as their children, and hence as a rule such children are exposed to a great risk, against which until recently no precautions whatever were taken. When full weight is allowed to this consideration there does not appear to be any reason to assume the existence of a special predisposition to account for the fact that human tuberculosis tends to run in families.

The truth is that importance would never have been assigned to inheritance of a special predisposition if it had been recognised from the first that tuberculosis is a contagious disease. It was a reasonable explanation of the observed facts in connection with human consumption before it had been proved that no case of it can arise in any family except through infection with bacilli derived from some previous subject of the disease; but as soon as that fact was recognised it became unreasonable to assume that inherited special predisposition was the principal cause of the occurrence of successive cases in the same family.

At the present day, therefore, it must be denied that the existence of family predisposition is proved by the fact that cases of tuberculosis are more frequent among the children of tuberculous parents than among those whose parents are healthy. An attempt, however, is sometimes made to reconcile belief in the importance of inherited special predisposition with the fact that tuberculosis is a contagious disease, (1) by assuming that in civilised communities the tubercle bacillus is so widely distributed that every one is constantly or frequently exposed to risk of infection, and (2) by citing cases in which various members of the same family have in succession developed tuberculosis long after separation from the diseased parent and from each other.

But the assumption that the tubercle bacillus is ubiquitous is opposed to a great mass of experimental evidence. It is true that since no restrictions are placed on the movements of tuberculous human beings no one can escape all risk of infection, but the average risk attributable to this circumstance is nothing like so great as the risk to which those are subjected who from the day of their birth live in close association with their already diseased parents.

As to the late development of tuberculosis by persons long after their removal from what may be called the consumptive

household, it must be observed that the fact is explainable without calling in the agency of inherited special predisposition. It is a fallacy to assume that in such cases the late development of the disease means a late infection, for there is clear evidence to show that infection in early life may not be manifested by outward symptoms until long afterwards, and, indeed, may never be followed by actual illness at all.

The whole question in connection with the alleged inheritance of a special predisposition may be summed up by saying that there is no evidence to prove that such inheritance plays a part of any importance in determining the incidence of tuberculosis in the human species, and that all the observed facts can be reasonably accounted for without assuming that susceptibility to tuberculous infection varies much from family to family.

This article is directly concerned with bovine tuberculosis only, and it may therefore be thought that an undue amount of space has already been devoted to the examination of questions bearing on the causation of the same disease in man. What has just been said, however, finds its justification in the circumstance that belief in the inheritance of a special predisposition, as a factor of importance in bovine tuberculosis, is almost entirely founded on the supposed impossibility of accounting for the observed facts in man on any other hypothesis than that the human victims of the disease have a more than average susceptibility to infection, and hand this on to their progeny.

It must be repeated that there are no facts in connection with the bovine disease which compel one to admit that susceptibility to tuberculosis varies greatly from individual to individual or from family to family. Moreover, when the question is examined from another point of view, evidence can be found which indicates that inherited special susceptibility is a negligible factor in the bovine disease. To assert that, in the case of cattle, successful infection with tubercle bacilli implies special predisposition, carries with it the assumption that the average bovine animal is non-susceptible to a degree that enables it to resist natural risks of infection. What is the evidence of this? The answer is that there is none. No breeder dare assert that the animals of his herd, or any particular individuals in it, are proof against tuberculous infection, or can remain healthy when subjected to the risk created by causing them to live in close association with diseased subjects. And this obviously is the practically important question in connection with the rôle of inheritance in bovine tuberculosis.

It cannot be too strongly emphasised that susceptibility or predisposition to tuberculosis is a normal character of all

the breeds of European cattle. One need not take up the extreme position of maintaining that all individual cattle of the same age are equally susceptible, for no two animals are exactly alike in respect of any of their anatomical or physiological characters; nor is it necessary to deny that whatever degree of susceptibility any animal possesses is likely to be transmitted to its progeny. From the breeder's point of view these points are devoid of practical importance, because the highest degree of insusceptibility possessed by any bovine animal is inadequate to enable it to withstand ordinary risks of infection; and further, because there is no practicable method by which an owner, with a view to selection for breeding purposes, can ascertain which of his animals possess powers of resistance above the average.

Finally in this connection a few words are necessary regarding the susceptibility of different breeds of cattle to tuberculosis. Assuming that susceptibility varies from breed to breed, the particular degree of susceptibility possessed by any breed is of course transmitted by heredity, like all other natural characters. But here again the practically important question is whether animals of any breed possess what may be called a serviceable immunity or insusceptibility—a power of resistance which will preserve them from infection in circumstances that determine the infection of other breeds.

At first sight there appears to be some evidence in favour of the view that susceptibility does vary considerably from breed to breed, for in this and most other countries the incidence of the disease is not uniform among all the different breeds. The Shorthorn and Jersey breeds in England, and the Ayrshire breed in Scotland, furnish an exceptionally large proportion of victims, as compared with Herefords, Galloways, or West Highland cattle. There is, however, no proof that any one of the last-mentioned breeds possesses a serviceable degree of immunity, and there are good reasons for thinking that the slighter incidence of the disease among them is ascribable to the fact that the circumstances under which they are usually bred, reared, and kept, are less favourable for the spread of the disease by contagion than in the case of the Shorthorn, Jersey, and Ayrshire breeds.

It is, however, unnecessary to discuss this question at any length, for, even if it were demonstrated that any breed were less susceptible than another, the fact would suggest no remedy against the evil of high susceptibility in particular breeds. Even if the Hereford or the Galloway were immune, it could not be suggested that these ought to be used to displace the Shorthorn or to heighten its resistance by crossing.

PART II.

THE ELIMINATION OF TUBERCULOSIS FROM INFECTED HERDS.

Before proceeding to consider in detail the methods by which tuberculosis may be eliminated from an infected herd, it may be well to set out the facts which are of fundamental importance in this connection :—

1. Tuberculosis is a purely contagious or infectious disease.¹ Its sole cause is the admission of tubercle bacilli into the previously healthy body, and the bacilli which serve as the starting point of the disease in any given case have always been derived from an antecedent case.

2. Even in badly infected breeding herds not one calf in a hundred is born diseased, or with tubercle bacilli in its body.

3. All the common breeds of cattle are susceptible to tuberculosis, and, as a working proposition, it may be accepted that no individual animal is immune against the disease. Cattle can be infected at any age, but young animals are probably more easily infected than adults.

4. Tuberculous cattle are a source of danger to healthy cattle kept in association with them because of the tubercle bacilli which escape from their bodies. Owing to the small extent or the position of the lesions, there may in certain cases be no outward escape of bacilli, but at any time, owing to extension of the disease, such a non-infective animal may become infective. Every tuberculous animal must therefore be regarded as actually or potentially a distributor of tubercle bacilli in its neighbourhood.

5. In the great majority of cases bovine tuberculosis is a chronic non-fatal disease, spreading slowly throughout the body, or even coming to a stand-still, and not sensibly affecting the animal's general health.

6. In a small minority of cases the disease is either rapidly progressive from the outset, or assumes that character after an initial chronic stage, and in either case it proves fatal if allowed to run its natural course. Animals affected with this progressive type of the disease are specially dangerous because of the great number of bacilli which escape from their bodies.

7. The principal channels by which the bacilli leave the bodies of diseased animals are the nose and mouth, the bowel, the udder, and the genital passages, but especially the first three of these. The lungs are among the commonest seats of disease in cattle, and when these organs are affected tubercle

¹ In the present state of knowledge no useful distinction can be drawn between the terms contagious and infectious.

bacilli are certain to be passed outwards through the nose or mouth when the animal coughs. Many of the coughed-up bacilli are swallowed by the patient and eventually discharged with the fæces. The milk seldom contains tubercle bacilli when the udder is not itself diseased, and, similarly, the bacilli escape from the genital passages of the cow only when there is tuberculous disease of the womb.

8. The two principal channels by which the bacilli enter the body are the nose and the mouth. When the bacilli are suspended in the air in a confined space, such as a cow-byre, they are apt to be inhaled, reach the lungs, and set up disease there. When they are swallowed they may set up disease in the intestine or the lymphatic glands attached to it. Experiments have shown that fewer bacilli are necessary to infect when inhaled than when swallowed, and this is in agreement with the fact that in the great majority of cases in cattle the disease begins in the lungs or the lymphatic glands attached to them.

9. When tuberculous and healthy animals are kept together the rapidity with which the disease spreads depends mainly on three things, viz.: (1) the number of animals affected, (2) the proportion of such animals in which the disease is in an advanced stage, and (3) the closeness of the enforced association between diseased and healthy. Close, continuous confinement in badly-ventilated houses is highly favourable to infection, because it increases the opportunities for the passage of bacilli from the diseased to the healthy. Association in the field is less dangerous, because the chances that bacilli passed out by the diseased will enter the bodies of the healthy, especially by inhalation, are diminished.

10. Although tuberculosis is usually contracted during direct association of diseased with healthy animals, it may be spread indirectly by materials containing or contaminated with the bacilli. Milk is probably the commonest medium by which such indirect infection is brought about, but any material, such as fæces, litter, or fodder, removed from a building in which tuberculous animals have been kept, may carry bacilli with it.

11. Although tuberculosis is in many cases not manifested by any outward symptoms, or any appreciable disturbance of the general health, the tuberculin test when properly carried out is a very reliable method of ascertaining whether an animal is affected or not.

Keeping these facts in mind, one may now proceed to consider what are the measures necessary to eliminate tuberculosis from a herd.

The first step in all cases must be to endeavour to ascertain what progress the disease has already made in the herd by having every animal in it tested with tuberculin. It has already been said that this test when properly carried out is very reliable, and a condition precedent to any attempt to eradicate the disease is implicit acceptance of the view that when an animal reacts to tuberculin it is tuberculous. It is possible that there are still owners in this country who regard the test as valueless, or at least very uncertain in its results. It is not proposed to argue the question in this article, but merely to say that the owner who refuses to accept the test as trustworthy shuts the door against all efforts to give his herd a clean bill of health.

In saying that the test is very reliable, it was the original method of employing it—the subcutaneous test—that was referred to, but account has to be taken of the fact that some of the newer methods, and especially the “eye test,” when used in combination with the subcutaneous test, mark a very important advance in the diagnosis of tuberculosis. It is probably no exaggeration to say that one can now use the test in such a way as to make it almost impossible for a case of tuberculosis to escape detection. Should, however, the result of the test appear to be ambiguous in the case of a few animals, it is essential for elimination purposes that these should not be regarded as healthy. Assuming that the herd has not been tested before, the safest plan is to class all the animals giving doubtful reactions as tuberculous.

As soon as the test has been carried out the diseased and the healthy must be permanently separated. If this is not possible any hope of eradicating the disease must be abandoned.

Assuming separation to be practicable, the buildings intended for the reception of the healthy animals must be thoroughly cleansed and disinfected. Cleansing must precede the use of disinfectants, and is scarcely less important. The choice of disinfectant is not of prime importance. Carbolic acid and chloride of lime are both reliable, and the great point is to use them unsparingly. The whole interior of the building should receive attention, but the parts most likely to be dangerous are the floor, feeding troughs, and walls and partitions to a height of six feet from the ground. Twenty-four hours after disinfection the cattle may be introduced.

The point which has next to be mentioned is one whose importance cannot be exaggerated. It is that the result of the first test must not be accepted as final and conclusive in the case of the animals that have *not* reacted. Neglect of this in the past has probably been more responsible than anything else for disappointment and partial failure in attempts to

eradicate the disease. A second test of such animals after a short interval is necessary, because at the time of the first test some of them may have been so recently infected that tuberculin will not yet provoke a reaction in them. In animals experimentally infected it has been found that a reaction may not be obtainable until seven weeks afterwards, and it is possible that in cases of natural infection the interval is sometimes longer. Having regard to this fact, it is probably best to carry out the second test three months after the first, and it certainly should not be delayed beyond that.

The three measures that have just been prescribed—initial test, separation of the non-reacting from the reacting, and re-testing of the non-reacting animals within three months—are the only ones that must be universally applied; the further steps for eradication of the disease may be modified according to the circumstances, and several possible cases may be separately considered.

The ease or difficulty of eradication depends mainly on the proportion of animals reacting to the first test and their value. The most favourable case is that in which the number of reacting animals forms only a small proportion of the entire herd and the individual value of these animals is not very great. Unfortunately there is reason to fear that in herds of any size it is a rare case. In many herds in which the calves are separated from the cows at birth, and are afterwards kept apart from these while indoors, the proportion of reactions in the young stock (under two years old) is often small, but if any disease at all exists in the herd anything between 20 and 80 per cent. of the breeding animals may react. When the proportion is less than 20 per cent., and indeed, whenever the owner feels that he can stand the initial sacrifice, it is best to dispose of the whole of the reacting animals immediately or as soon as they can be made ready for the butcher, the fact that they are reacting animals being, of course, disclosed to the intending purchaser.

This will leave the owner with only non-reacting and presumably healthy animals. But even if the herd is a self-supporting one, mainly or entirely recruited by animals bred on the place, it must afterwards be tested every six months. This may appear an onerous undertaking, but those who are not prepared to carry it out would be well advised not to incur the trouble and expense connected with the initial measures of eradication.

Every new animal introduced into the herd, whatever its age, sex, or value, must be quarantined for one month after purchase and then tested. If it does not react it may be allowed to mix with the other animals, but it should be re-tested within two or three months. These precautions are

not to be omitted even in the case of an animal sold with a warranty that it has recently been tested and failed to react.

The most difficult cases still remain to be dealt with. These are the cases in which a large number of valuable animals react to the first test—a number so large that the owner cannot afford the sacrifice involved in selling them for slaughter. This unfortunately is likely to prove a common occurrence in valuable pedigree herds. In such a case the possibility of keeping the reacting animals until they lose their value with age has to be considered. If accommodation can be found at a separate farm the best plan is to move either the reacting or the non-reacting animals.

If a separate farm is not available the reacting and the non-reacting animals must be separately housed on the same farm. Where there are several cow-houses the separation may be possible without any reconstruction, but where there is only one it may be divided in any convenient proportion by a partition. The partition may be either of wood or brick, but it must extend from floor to roof and be everywhere "tight," so as to prevent air-currents through it. This, of course, means that a separate entrance must be provided for each of the two compartments into which the building has been divided. If possible separate milkers and attendants should be employed for the two lots of animals, and if that is considered impracticable the plan (recommended by Professor Bang) may be adopted of providing two sets of boots and overalls for the workers, the healthy section being always fed and milked before the diseased one.

The measures which ought to be taken to preserve from infection the calves born after separation of the cows into a reacting and a non-reacting group demand special consideration.

The greatest difficulty in this connection exists in the case of valuable pedigree stock in which it is customary to allow each cow to suckle her own calf. The question here arises whether this is permissible in the case of the cows belonging to the reacting group. The alternative is to remove the calf from its dam as soon as it is born or within a day or two afterwards, and either to provide it with a foster-mother or to have it hand-reared. If a foster-mother is provided it must be a non-reacting cow, and if pail-feeding is adopted the milk must either be obtained from non-reacting cows or be heated to 80° C. or over for fifteen minutes to destroy any tubercle bacilli that may be present in it. In either case the calf-house must be a separate building, not communicating with the one in which the reacting cows are kept.

There can be no doubt that the plan of removing the calf from its reacting mother at birth is the safest one, for when

the two are left together, especially indoors, there is a very considerable risk that the calf will become infected before weaning-time. At the same time, the owner who finds separation of the cows and young calves impracticable need not on that account decide in advance that elimination is impossible for him. It will still be worth his while to maintain the separation between the reacting and the non-reacting cows, and to face the risk involved in allowing the former to rear their own calves. When the calves thus reared come to be weaned, the tuberculin test properly carried out can be trusted to tell him which of them have escaped infection, and these only must be drafted into the sound division of the herd. Should the plan of separating the calves from their mothers be adopted, it will still be obligatory to have the test applied to the calves at weaning time before concluding that they are sound.

The matter, of course, works out more simply in a milking herd where the usual custom is to rear the calves by hand. When the reacting and non-reacting cows have to be kept on the same farms (but in separate houses), a single calf-house will serve for all the calves, that is to say, it is not necessary to keep the calves of the healthy and of the diseased cows separate. But here again the calf-house must be a separate building, not communicating with either cow-house. If sufficient milk for all the calves can be obtained from non-reacting cows it may be used in its natural state, but milk from the reacting cows should not be used for the calves unless it has been heated.

The question whether the reacting and the non-reacting animals should be kept apart when at grass as well as when they are indoors is obviously an important one, and it demands an answer whether the two sets of animals, after the first test, are kept at different farms or in separate houses at the same stading. In the former case the question is raised as soon as the calves of the reacting cows have to be sent to grass. The answer to the question must be that when the circumstances permit it it will certainly be best to keep the reacting and non-reacting animals apart in the fields as well as in the houses, but again it may be said that if an owner finds this quite impossible he may still with advantage adopt all the other means of elimination that are practicable. The risk that some of the sound animals may contract the disease at grass will be more than appreciable, but very much less than when diseased and healthy are kept under a common roof.

Another question that may sometimes have to be considered is whether a reacting bull may be used for the healthy cows. What has already been said in the first part of this

article will have made it plain that such a practice involves no risk that the disease will be handed on from the bull to the calves, and the danger to the cows is so slight that it may be faced, provided always that the bull appears healthy or is kept isolated except when his services are required.

It has already been laid down as a rule that the first step towards elimination ought to be to test the whole of the herd in order to ascertain what progress the disease has already made in it. This was the plan originally favoured by Professor Bang in Denmark, but he subsequently advised, or at least sanctioned as an alternative, that the owner should refrain from testing the adult breeding animals, and agree to regard them as all infected. The reasons assigned for this plan are—(1) that if the herd is tuberculous to any extent a very large proportion, or even a decided majority, of the adult animals may be expected to react; (2) that a number of the older animals may fail to react although actually diseased; and (3) that the discovery that a large proportion of the breeding animals are already affected is apt to discourage the owner and lead him to abandon all hope of being able to eliminate the disease entirely. The force of these reasons cannot be denied, and it is even possible to add others in favour of the plan of leaving the older animals untested. One is that most owners would prefer not to know for certain that animals which they cannot afford to dispose of immediately are tuberculous. That this is a consideration likely to be taken into account both by owners of milking herds and by those who breed pedigree animals is sufficiently obvious, and the ultimate decision as to whether the adult animals are to be tested or not must be left to the owner himself.

It may, however, be maintained that it is as a rule the wisest plan to submit the entire herd to the tuberculin test at the outset, and this plan will find immediate justification when the result of the test is to show that only a minority of the adult animals are diseased.

What, it may now be asked, is the time within which the owner of a tuberculous herd may reasonably expect to obtain a clean bill of health for his stock, provided the disease is resolutely attacked on the lines laid down in the preceding pages? To this question no short and precise answer can be given, as the period depends upon the original condition of the herd, the financial position of the owner, the separate housing accommodation available for the reacting and the non-reacting animals, and the intelligence and consistency with which the preventive measures are carried out.

It is, of course, *a priori* obvious that when a large proportion of the breeding animals react to the first test, and financial

considerations make the immediate sale of these animals for butchers' purposes impossible, complete eradication of the disease is not to be expected for many years, unless the herd is a small one, and, unfortunately, it is, as a rule, the large herds that are worst affected with the disease. The only persons who can expect to attain immediate and complete success are those who are able to dispose forthwith of all the animals found to be diseased on the occasion of the first test. Even these may not be immediately successful, but by taking advantage of the combined methods of testing recently introduced, it will generally be possible to weed out the last of the diseased animals at the second test, that is, within three months.

When two separate farms are available, one for the reacting and the other for the non-reacting animals, the owner can by the same procedure within three months be practically assured that one section of his herd is healthy.

In all other circumstances years may be expected to pass before even the non-reacting section of the herd can be considered absolutely free from the disease, for the rule is that when the reacting and non-reacting animals are kept on the same premises, but in separate houses, the successive tests will reveal a few reactors among the animals previously supposed to be healthy. Disappointments of this kind may be caused by (1) one or more infected animals having failed to react on the occasion of the preceding test; (2) the occurrence of a case of congenital tuberculosis in the herd; or (3) infection accidentally introduced into the healthy section.

It is very probable that in the past the first of these causes has often been responsible for unexpected reactions in the healthy division of the herd. Hitherto sufficient account does not appear to have been taken of the fact previously mentioned, that an animal may not develop the power to react until some considerable time after the act of infection. This possibility must always be kept in mind, and to counteract it the second test must be carried out within three months of the first. Moreover, it is important that the interval between the subsequent tests should not be longer than six months.

Provided none of the reacting cows kept on for breeding purposes show any outward symptoms of disease, there is very little risk that any of the calves will be born tuberculous, but, again, the possibility must be kept in mind, and young calves that appear weakly and unthriving should be isolated until they can be tested.

There can be no doubt that the third of the before-mentioned causes, viz., accidental infection, is in most cases responsible for the repeated occurrence of reactions in the healthy section

of the herd. By accidental infection is here meant the conveyance of bacilli from the premises in which the diseased animals are kept into those set apart for the healthy division. It is quite impossible to ensure that this will not take place when the two sets of buildings are contiguous, or even when they are some distance apart, if there is only one set of milkers or attendants for the whole of the animals. If the diseased and the healthy are allowed to mix at grass there will be an added risk of infection, and the risk becomes serious if reacting animals are kept on after they have developed distinct signs of disease, such as wasting, cough, or discharge from the genital passages. It cannot be too strongly insisted on that a constant outlook must be kept for symptoms of tuberculosis in the reacting animals, and any animal presenting such symptoms should be immediately destroyed. And in this connection it may also be stated that blind reliance should not be placed on non-reaction to tuberculin; the healthy section of the herd must also be carefully watched, in order that any animal developing suspicious symptoms may be promptly isolated or destroyed.

In conclusion it may be said that no one who is well acquainted with the circumstances will venture the opinion that for the average British farmer the elimination of tuberculosis from his herd is an easy task. The fact that as yet few have attempted it is no doubt partly due to obvious difficulties, of which the chief are inadequate housing accommodation and inability to make the sacrifice involved in selling valuable breeding or milking animals at butchers' prices. It must also be confessed that in many cases inability to see any promise of adequate reward for the trouble and expense necessary to stamp out the disease is largely responsible for the inaction. The actual loss attributable to the disease is often not very great, even in herds where a considerable proportion of the adult animals are infected, and there is as yet a difficulty in obtaining a higher price for the milk of cows proved to be free from tuberculosis. But the valuable pedigree herds of this country stand on a different footing. In the majority of them sufficient housing accommodation to make possible the separation of the diseased and the healthy already exists or could be provided without serious expense, and there would be an undoubted gain in the higher prices obtainable for animals sold with a guarantee of freedom from tuberculosis. The purification of these herds could not fail to be profitable to their owners, and it would provide the object lesson most needed to encourage breeders in general to wage systematic war against this widespread disease.

JOHN MCFADYEN.

Royal Veterinary College,
London, N.W.

RED POLL CATTLE.

THE visit of the Royal Agricultural Society of England to Norwich will be welcomed by all East Anglians, and the breeders of Red Polls will be wise to make a good display of their native cattle. There is no other polled breed in England, and its merits have hitherto been not fully recognised.

The Red Poll seems above all others the animal for utility, safety, and ornament. Nothing can look prettier than the various shades of red in a meadow or park. The cattle are deep milkers, and their period of lactation lasts right up to the birth of another calf—a great advantage where a regular but small supply of milk is required for a household. The milk is rich without being over rich; it makes excellent butter and good cheese.

The cows and bulls are generally docile, and the absence of horns is no mean safeguard against danger. Valuable horses and colts can be turned out with these cows without fear of their being accidentally or intentionally gored.

These advantages are appreciated by members of the Red Poll Society, very many of whom are gentry keeping cows for the purpose of supplying their own wants; but it cannot be too strongly asserted that the Red Poll is by no means only a gentleman's cow, but is a real utility animal for a farmer who wants to pay his rent, either by selling milk or by rearing his own calves; and that it has points of superiority over other breeds.

To give one instance of the advantage of the absence of horns. At the last London Dairy Show, October, 1910, the Red Polls were so crowded together that the attendants had hardly room to milk their animals, nor the cows to lie down; but when protest was made to the Steward that they had not their fair share of room, he explained that the adjoining breed of cattle on first arrival began horning each other so viciously that they had to be separated by a greater distance at the expense of the space allotted to the Red Polls.

It will be found that about twelve Red Polls can be kept in the same space as about nine Shorthorns—no mean consideration in yard room.

The characteristics of the breed as revised in Herd Book, Vol. XXVII. (1910), are as follows:—

COLOUR.—Blood red; deep red for preference; tip of tail and udder may be white.

HEAD.—Must be poll—i.e., not artificially polled—and without slugs, or abortive horns.

NOSE.—White.

HIPS.—Evenly rounded; not prominent.

In all other particulars the commonly accepted points of a superior animal are to be taken as applying to Red Poll cattle.

Note must be taken of the objectionable points, viz.:—

Any extension of white in front of the udder.

Any white on a bull, except on tip of tail.

A cloudy or dark nose.

Animals are disqualified from entry in the Herd Book which possess—

Any horns, slugs, or abortive horns.

Any signs of artificial polling.

A black or blue nose.

Any white except on the tip of the tail, the udder, or for a short way under the body.

Any colour other than red.

In the original standard description compiled on the foundation of the Herd Book in 1873, the following additional points are mentioned as characteristic of a superior animal:—

(1) A neat head and throat.

(2) A full eye.

(3) A tuft or crest of hair should hang over the forehead.

(4) The frontal bones should begin to contract a little above the eyes, and should terminate in a comparatively narrow prominence at the summit of the head.

These last four points have, however, been omitted from the last issue of the Herd Book (1910). The first corresponds to Arthur Young's description of the Suffolk cows—"a clean throat with little dewlap; a snake head"—and is always characteristic of a good milker. The tuft or crest of hair is only occasionally seen now, and the tapering of the poll is not regarded as of importance, though Youatt in his *Book on Cattle* mentions that some breeders in his day paid attention to it—"If the crown of the head is fine like that of a doe, and drawn almost to a point on the top, the breed is supposed to be good."

In his *View of the Agriculture of Suffolk*, 1797, Arthur Young, first Secretary of the Board of Agriculture, speaks in high praise of the Suffolk polled cows for their milking qualities.

The Rural Economy of Norfolk, 1787, by Mr. Marshall, describes the Norfolk cows as the Hereford in miniature, possessing two qualifications—superior quality of flesh and fattening freely at an early age.

It is the continued blending of these two strains that has made the Red Poll the splendid dual-purpose animal that it is, but to a certain extent the original distinction between them still holds good—the Suffolk herds being more marked by milking quality and the Norfolk by a disposition to lay on flesh.

Suffolk polled stock was first exhibited at a "Royal" Show in 1840, at Cambridge, where Sir Edward Kerrison won a prize with a yearling bull. Special breed prizes were first offered for the Norfolk and Suffolk polled cattle at the Battersea Show, 1863.

It was not till 1873 that representatives from the two counties met and decided that a Herd Book should be established and the breed defined. The enterprise was carried through by the energy of Mr. H. F. Euren, who made the venture his own and acted as secretary for many years.

This gentleman combined with a peculiar faculty for keeping records and tracing pedigrees a real admiration for the Norfolk hackney and the Norfolk cow.

Not only does the Red Poll Society of Great Britain and Ireland derive its existence from him, but the Hackney Stud Book and Society also owe much to his work and influence; and it is his son, Mr. F. F. Euren, who has made the International Horse Show at Olympia one of the attractions of the day.

Experience of the recently established Dairy Shorthorn (C.H.B.) Society enabled the founder and his friends to arrange an improved system of registering pedigrees of Red Poll cattle; and much trouble was taken to ascertain which were true-bred herds before they were admitted to the Herd Book.

Herds were divided into groups, mostly geographical, which were distinguished by letters: as A, Elmham; K, Kimberley; N, Necton; O, Oakley; U, West Suffolk, &c., &c.

Four groups are named from famous breeders: B, Biddell; H, Hammond of Bale; P, Powell; W, Wolton of Newbourn.

The B group is now the most numerous, and in the Rendlesham and Sudbourn herds has produced many milkers. The H group is remarkable for its distinguished series of "Davy" daughters and "Davyson" sons. The P group is the blue blood of the Red Polls.

Three groups are now extinct, C, D, G, while F, M, and X only exist in units.

The groups are divided into tribes, which consist of all the descendants, male and female, of each ancestress cow, foundress of the tribe, and which are marked by numbers attached to the group letter. Thus A, the Elmham group, includes nineteen tribes, which are distinguished as A₁

descended from *Primrose*, A, descended from *Cherry*, A, from *Brettenham Handsome*, A₁₀ from *Lady Constable*, &c.

Each calf follows the tribe of its dam.

Volume I. of the Herd Book is known as the Foundation Volume; but six additional Foundation tribes of old Norfolk and Suffolk cattle were added to Volume II., and, under exceptional circumstances, another has just been admitted to the list in Volume XXVII.

Though it is intended in this article to deal with the breed rather as it is at present, than as it was in the past, there are two herds only recently dispersed that can hardly be passed over without some mention.

The first is that of the late Mr. Garrett Taylor, whose presence on the Council of the R.A.S.E. will be remembered by older members, and who with Mr. Euren was one of the earliest advocates of the Red Poll.

His herd was the largest and averaged over one hundred animals, for many years supplying Norwich with milk from the Whitingham homestead.

It was here that was set the example of keeping regular milk records. These were first published in the Herd Book, 1892, and were followed next year by the publication of the percentage of butter fat found in the milk of each individual cow.

This was no light undertaking in such a large herd, but it was diligently carried out for several years, at a time when the importance and value of such experiments was not realised so fully as it is now.

The second herd alluded to is that of Lord Rothschild, which deserves mention for the wonderful collection of deep milking cows which were gathered at Tring.

The value of the attention paid to milk records there is shown by the many prizes won at Shows held by the R.A.S.E., B.D.F.A., and other exhibitions where the performances of dairy cattle at the pail are the first consideration when making the awards.

There is additional interest in the Tring records because herds of Jersey and Shorthorns were there under the same management, and comparative statistics of all three breeds were published in the *Live Stock Journal* of November 20, 1903. Taking the cows that were in the herd the whole year round, we find that—

26 Jerseys	gave	173,153 lb	of milk.	Average	6,659.
26 Shorthorns	"	188,290	" " "	"	7,242.
37 Red Polls	"	259,264	" " "	"	7,007.

Assuming, as stated in *Primrose McConnell's Agricultural Note Book*, that the average weights of Jersey, Shorthorn, and

Red Poll cows are respectively 830, 1,350, and 1,100 lb., and performing a simple rule of three sum, we may calculate as follows :—

1 Jersey of 830 lb giving 6,659 lb = 1 cow of 1,000 lb giving 8,023 lb
 1 Shorthorn of 1,350 lb „ 7,242 lb = 1 cow of 1,000 lb „ 5,361 lb
 1 Red Poll of 1,100 lb „ 7,007 lb = 1 cow of 1,000 lb „ 6,370 lb

These figures indicate that the Red Poll has very high attributes as a milk producer.

I have also had the curiosity to add up the “percentages” and averages in Table III., Quantity and Quality of Milk, 1906-1909, published on page 112 of *B.D.F.A. Journal*, 1910, and the appended figures give the average results of four years :—

Breed	No of cows	Average weight of milk		Percentages in milk—			
		Morning	Evening	Fat		Solids not fat	
Shorthorn pedigree	62	23 9	23 1	3 27	3 89	9 02	8 87
Ditto, non-pedigree	69	25 7	24 8	3 48	3 98	8 95	8 78
Jerseys	64	17 5	16 6	4 53	5 29	9 34	9 12
Red Polls	36	20 1	18 9	3 37	3 67	9 09	8 96
Kerries	15	18 3	16 9	3 95	4 47	9 16	8 94

I think that this table may be taken to show fairly the comparative merits of the four breeds as regards their milk, butter, and cheese-producing qualities.

One of the best cows bred by Mr. Garrett Taylor was *Clarissa* 13315 W., which during three years that she was in his herd gave a yearly average of 8,000 lb. of milk, and then came into the possession of Lord Rothschild. Her records at Tring and at the R.A.S.E. Shows during the next four years are appended below in tabular form :—

Year	Lb of milk given in year	Date of calving	Honours in Red Poll Milk ing Classes, R.A.S.E.	Points gained	Butter fat percentage
1905	8,024	Feb 9	1st	73 03	3 47
1906	11,118	May 9	2nd	62 12	3 50
1907	12,005	Apr 27	1st	65 83	3 02
1908	13,577	Apr 24	1st	78 15	3 90

The column showing butter fat percentage is worth noting as showing the variation that may occur in different years in the same cow; the last year when she yielded most milk, she also gave the highest quality.

Clarissa at Lord Rothschild's sale in 1909, at ten years of age, fetched seventy guineas.

The cow *Linda 3rd* 13769 P., that defeated *Clarissa* at the R.A.S.E. Show, Derby, 1906, was likewise bred by Mr. Garrett Taylor, and her progeny are a good illustration of the dual-purpose qualities of the breed.

Her daughter, *Acton Dairymaid*, won the Breed Cup at Smithfield, and was Champion of the whole Show, Ipswich, 1903. Next year a son as a steer won the Breed Cup at Smithfield. Another daughter, *Acton Fillpail* 20180, was second in the Milk-yield Class at the Royal Show, Liverpool, 1910; and another son, *Acton Dairyman* 9880, was second at the Suffolk Show, 1910.

Linda 3rd is now the property of Sir W. Corbet, whose herd at Acton Reynold will be mentioned later.

Another pioneer of the Red Poll breed, Mr. Harvey Mason, of Necton Hall, recognised early the advantage that the use of the Gerber Butyrometer conferred in enabling one to select for breeding purposes those cows that gave the richest milk; and he has himself calculated and published the butter fat percentages of the milk given by his cows.

It is largely due to his influence that the Red Poll Society have now instituted an arrangement by which members can send samples of the milk of individual cows to the Eastern Counties Dairy Institute for analysis.

This plan only came into practice in September, 1910, and during that month the milks of 166 cows have been tested, and of them 11 have given over 5 per cent. of butter fat; 74 over 4 per cent.; 76 over 3 per cent.; and 13 under 3 per cent.

The following cows are selected as giving 5 per cent. of butter fat, and their records shown on a facsimile of the sheet used for the purpose:—

	Herd Book number	Name of cow	Tribe letter	Age of cow	Date of last calving
1	18754	Moth	L ₉	8	July 20, 1910
2	20816	Nips	1 Norf	4	Oct. 16, 1909
3	20812	Pebble	P ₁	3	Sept. 2, 1910
4	18191	Nettie 37	A ₈	9	July 22, 1910
5	10619	Perfidy	1 Norf	14	Apr. 27, 1910
6	19618	Banking	V ₈	6	July 24, 1910
7	19548	Sunny Cheriton	V ₁	7	Mar. 1, 1910
8	20597	Sudbourne Bell Dame 2nd	B ₁₁	5	Sept. 2, 1910
9	20703	Davy 324	H ₁	4	Apr. 16, 1910
10	12819	Meadow Blush 2nd	A ₁	13½	Feb. 15, 1910
11	20769	Kitchener	U ₂	5	Nov. 28, 1909

	Yield of milk in lb			Butter fat per cent		Actual weight of fat in lb
	p m	a m	Total	p m	a m	
1	17½	20½	38½	5 1		1 92
2	4½	7½	12	5 9	5 0	64
3	6	6	12	6 4	4 8	67
4	17½	22½	40½	5 0		1 51
5	4½	9	13½	5 2		70
6	10½	17½	28½	5 0		1 42
7	6½	11½	17½	5 4		72
8	12	19	31	5 7	4 5	1 54
9	17	20	37	5 7	4 5	1 87
10	11	11	22	5 1	4 9	1 10
11	6	5½	11½	6 45	6 2	73

It enhances one's opinion of Mr. Harvey Mason's returns to find that the high butter fat percentages which they attribute to his cows are more than confirmed by the figures of the E. C. Dairy Institute.

One cow in his herd deserves special mention for the quantity and quality of the milk yield, which has continued for several consecutive years; I mean *Berry* 17914 W.

Year	Milk yield in lb	Butter fat percentage	Year	Milk yield in lb	Butter fat percentage
1906	9,899	4 4	1908	11,757	5 0
1907	10,682	5 0	1909	12,565	4 7

The Necton Hall herd consists chiefly of the Old Necton group, and has produced some notable winners, viz., *Majolini* and *Magran*, both R.A.S.E. Champions.

Another breeder who has devoted time and attention to the butter fat question is Mr. C. F. Newton, of Saham Toney, and it is a pity that he does not publish his records in the Herd Book. His experience confirms that of Necton Hall, and at Shows that a Red Poll cow will produce a large quantity of milk and have a high percentage of butter fat. For instance, he informs me that 16925 *Kitchener's Daffodil* gave in 1904-1905, 10,449 lb., and in 1908-1909, 9,902 lb. of milk, and in these periods the percentage of butter fat was as high as 5 per cent., and at times she has given as much as 6 per cent.

His general experience is that 22 lb. of milk will make 1 lb. of butter, but variations of 1 per cent. often occur in the yield of butter fat even in the milk given at home in the usual life of a cow, owing to variations of conditions of weather, food, &c.

He also believes that in the case of a breed which inherits flesh-making characteristics there is a decline of butter fat in the milk if the cow loses flesh (in other words, body fat), unless the milk yield declines rapidly as well.

The Suffolk Agricultural Association has offered prizes for the best milking cows to be judged on a scale of points similar to that of the B.D.F.A., and the Red Polls invariably compare favourably with other breeds.

In 1908, in a special class of Red Polls (11 entries), the percentage of butter fat was very satisfactory, the average being 3·95.

In the two next years the class was open, and in 1909 the Red Polls came out top, while in 1910 the verdict was reversed.

The average percentage of butter fat and points gained are appended :—

		Percentage of butter fat	Average points gained
1909	5 Red Polls	3 8	134·59
	3 others (2 Jerseys)	3 9	116·04
1910	5 Red Polls	4 24	121 03
	5 others (2 Jerseys)	4 24	128 62

In the above competitions, as far as Red Polls are concerned, the contest lay almost entirely between the famous Rendlesham and Sudbourn herds, and it is worth noting that both herds have been developed on similar lines—both are primarily intended for the production of milk; careful milk records are kept; the B (Biddell) group largely predominates; heifers are bred rather early. The success of both in breeding milk-producers is proved by the number of prizes won by the two herds at the B.D.F.A. and other Shows.

For instance, at the London Dairy Show, 1909, with the exception of a second prize won by Lord Radnor with *Mona* 8083 W., all the others, including Reserves and H.C., were shared among Mr. K. Clark and the Smiths, father and son. The above-mentioned *Mona* won first prize for milking at the London Dairy Show, 1907 and 1910, and she is not by any means the only prize winner in the Longford Castle herd.

It is a pleasure to see Red Polls reinstated at Easton Park, and to congratulate the Marchioness of Graham on the possession of several prize winners, including *Warwick* 9515, a fine bull bred by Mr. Arkwright, and Champion in 1909 at the R.A.S.E. and County Shows.

Two herds which have been formed during recent years, and which have done much to improve the breed, are those

of Lord Cranworth, of Letton, and of Sir Walter Corbet, of Acton Reynold.

The success of the former may be attributed to the dispersal sale of Mr. John Hammond's herd at Bale in 1906, when some of the best specimens were selected; they and their descendants have won many prizes. Undoubtedly the best animal bred at Letton is the bull, *Letton Vanity Davyson* 9819, which was second and Reserve Champion at the R.A.S.E. Show, Gloucester, 1909; and in 1910 won the Championships at the Norfolk and Suffolk Shows. He is rather a beefy bull, and at the R.A.S.E. Show, Liverpool, was rejected in favour of his stable companion, *Davyson* 297, who is more of a dairy type.

The name of Davyson has been so long associated with the H. (Hammond) group that we rather regret to see it introduced at Letton into other groups.

Sir Walter Corbet's herd has produced some good animals, both male and female. *Acton Corvus*, an evenly fleshed and fine quality bull, in 1910 was made Reserve Champion in the round of Shows, and as he comes from that grand cow *Desirée of Johnstown* 16483 P., well known at the London Dairy Show, he should be of good service as a sire.

Waxlight the 2nd 18965, V, a purchase made at the late Lord Amherst's sale, has proved herself a true dual-purpose animal; in the prime of life winning prizes for inspection in the Showyard, and in more mature years distinguishing herself as a milker. In 1910 she was first and Champion at the R.A.S.E. and third in the Milk-yield Class.

So far we have chiefly referred to the milking qualities; but the annals of the Fat Cattle Clubs prove that the Red Poll can also please the butcher.

The sales at Ipswich after the Christmas Fat Cattle Show, of which records as to weights, prices, &c., have been systematically kept and published by Messrs. Bond & Son (the Society's Auctioneers), show that for several years the top price was made by a Red Poll and that the youngest animal sold was also a Red Poll.

In 1908, at the Smithfield Show, the two winning Red Poll steers under three years old averaged 16 cwt. 0 qrs. 25 lb.

In 1909, a new exhibitor, Mr. Wilson, of Redgrave, attained distinction by two first prizes and one third prize, besides the Cup for the best of the breed, and the animals shown were regarded as unusually good specimens. The same owner also won the Female Championships at the Norfolk and Suffolk Shows, 1910, with his cow, *Charming Davy* 4th 19668.

As to the older herds belonging to the Right Hon. Ailwyn Fellowes, Sir R. P. Cooper, and Messrs. T. Brown & Son, it

is impossible to take up a recent Journal of the R.A.S.E., or a catalogue of the Smithfield Club, without finding some distinction attached to their names, and they have had their share of success at the Summer Shows of 1910.

Each in turn has brought forward excellent specimens of the breed, some of which have been recently exported at high prices, while others are spending their life quietly at home, passing on to the coming generation the symmetry and dairy qualities of their ancestors.

This article does not pretend to be exhaustive, and want of time and space must be the excuse for omitting longer notice of these and other excellent herds belonging to notable owners like the Earl of Lonsdale, W. E. Balston, J. E. Quedsted, G. Dudley Smith, and many other members of the Red Poll Society.

It has been suggested that a few remarks about rations and treatment may not be out of place. As far as feeding is concerned, there must be *quot homines, tot sententiæ*; but I venture to describe the practice that is observed in the Aspull Hall herd, which is kept for dairy purposes.

The cows have a bait morning and evening throughout the year, at milking time, consisting of $\frac{1}{4}$ peck of meal (generally 3 parts oats, 1 part bean meal) mixed with about 1 peck of chaffed hay or oat straw and hay chaffed.

In August and September, when the pastures get bare and parched, this may be supplemented by green maize, cut up, about $\frac{1}{2}$ bushel of which is mixed with the peck of chaff above mentioned.

In October and November cabbages are thrown on the meadows, about one cart load to ten or twelve cows, and this is continued as long as that valuable crucifer is available.

After the cabbages are finished mangolds are used, and about a bushel of them sliced is added to the morning and evening bait.

The cows go out for some time on the meadows every day throughout the winter, in snow or rain, unless the weather is outrageously stormy or wet. Then and at night the cows are loose in a large covered yard, and have hay in the racks, about one truss to five cows. The roof of the yard is constructed of tarred planks, between which there is a space of about $\frac{1}{2}$ in.; this gives free scope to ventilation, but does not allow much rain or snow to penetrate.

In the spring, about April, before the grass begins to grow, whole mangolds are thrown on the meadows for consumption. Cake is very rarely given, but is a useful reserve food if the grass is very lush or the cows purge too much.

Calves are generally kept on the cow for a fortnight, and then weaned on skim milk and "calf meal." If the milk is not required they may be left on the cow a month or more.

The bull generally runs with the cows on the meadows and in the yard, and is therefore less likely to be vicious.

By careful breeding and selection the average weight of milk given by my cows in the year has gradually increased in about fifteen years from 7,000 lb. to over 8,000 lb.

Many breeders of Red Polls have proved that by judiciously selecting bulls from parents having large milk records, milk can be bred into and retained in a herd. However, when the large supply of milk is alone studied, the size of the animal deteriorates. It is therefore wise to use in the herd two dairy bulls in succession, and then to employ the services of a large bull of prize-winning blood, which would in most cases bring back to the herd the size which had been lost in previously breeding by dairy-bred sires.

Fresh air is regarded as of the utmost importance in the health of a cow. In 1899 my herd of twenty-six cows were tested with the tuberculin test, and three which reacted were at once drafted out.

In 1904 the herd of twenty-eight were again tested and none reacted; and a similar operation in 1910 found them also immune. The bracing air of the eastern counties and the open yards make the native Red Polls one of the hardiest and healthiest breeds in England.

J. B. CHEVALLIER.

Aspall Hall,
Debenham, Suffolk.

THE ORIGIN OF SOME OLD AGRICULTURAL WORDS.

I AM given to understand that one of the difficulties now experienced, in the course of the great improvements that are being made in the advancement of agricultural science, arises from the lack of precision in the terms employed by practical farmers. This is a difficulty that must have arisen in every department of science, and it obviously has to be considered, and if possible to be overcome.

In all such cases, terminology must ultimately be regulated by general usage, controlled as far as possible by authority. And of course one difficulty is to establish authority where it does not actually exist. We must therefore first consider what sort of authority we already possess.

A large number of agricultural words are, from the nature of the case, drawn from the various provincial dialects of England. It is not to be supposed that such country words are, in general, either of late growth or of what is called vulgar origin. All experience shows that they are frequently of great antiquity, and not unfrequently preserve old forms with an accuracy beyond expectation. But inasmuch as varying dialects have each their own phonetic laws, the same old word is frequently represented by different forms at the present day. It is not always easy to decide which of these is to be preferred; but it will obviously be convenient to make such a decision whenever it is practicable.

Amongst the various subjects with which agriculture has to deal, I find it convenient, first of all, to consider plant-names. Under this head, I beg leave to submit the following observations.

This subject long ago received particular attention by the English Dialect Society. Its importance was fully recognised, and the very difficult task of drawing up a full and sufficient list was entrusted to two most competent experts, who were engaged upon it for several years. The result was the *Dictionary of English Plant-names*, by James Britten, F.L.S. (of the department of Botany, British Museum), and Robert Holland," published for the English Dialect Society in 1886. Here, at any rate, is an authority which is worth attention.

When Dr. (now Professor) Wright undertook to edit the whole of the material collected by the Dialect Society, with large additions from other sources, this work was constantly in requisition, and nearly all of it was incorporated in his volumes. It will thus be seen that the first book to be consulted for the use, not only of plant-names, but of a large number of agricultural terms, is certainly the English Dialect Dictionary, a copy of which should be accessible to all who are concerned in agricultural pursuits.

I am afraid that this wonderful work is very little known and but slightly appreciated. Yet these six quarto volumes are such as any nation may well be proud of, and such as no nation but our own possesses. It not only provides us with an enormous store of dialectal words, such as was never got together before, but it tells us what the words mean, how they are usually pronounced, in what counties they are used, and in what glossaries they are recorded. The most astonishing part of the performance is the English Dialect Grammar, a work which none but Dr. Wright could have edited, in which the phonetic side of our dialect receives minute attention. This is appended to the sixth volume, and is followed by an index which is the most wonderful achievement of all. In this we find, for example, a complete list of the number of ways,

amounting to nearly thirty, in which the word *house* is pronounced in our dialects; with similar lists for hundreds of other words. I mention this to give an idea of the extreme care and minuteness with which the work has been done.

To return to our plant-names. What is the result of Britten and Holland's work, as recorded (for the most part) in the English Dialect Dictionary?

What they found, and have recorded, is very much what might have been expected. In different counties different names have prevailed; and names which were but vaguely given at the outset have been largely confused and intermixed. But it is as well that we should know this and realise it; because we shall then more clearly recognise the state of things with which we have to deal.

In many cases the names reported were so doubtful in their application that the editors had to insist upon receiving a specimen of the plant; for here, at any rate, they were safe. By help of this precaution, and by consulting all the old herbals, they compiled their list. A single example will suffice to show what they found.

The word *cowslip* has at least six meanings, viz.: (1) *Primula veris* (Cumberland, Yorks.); (2) *Primula variabilis*, Goup., and *P. elatior*, Jacq. (Essex, Cambs., Herts., Kent, Middlesex, Suffolk); (3) *Orchis mascula* (Rutland); (4) *Narcissus Pseudo-narcissus* (Devon); (5) *Anemone nemorosa* (Scotland); (6) *Fritillaria Meliagris* (Hants.).

Conversely, the Latin index shows that the *Primula veris* has at least thirty-four different names in our provincial dialects. I need not give them all; some of the more striking are *cowslap*, *culverkeys*, *galligaskins*, *herb paralysy*, *paigle*, *palsy-wort*, *St. Peterwort*.

The result is useful and valuable; but for practical purposes, where accuracy and fixity of nomenclature are desirable, it is obviously chaotic and impossible.

I am asked, by way of example, what is to be done with *Medicago lupulina*? It is variously called black medick or black-seed, hop-trefoil, yellow trefoil, &c.

In a case like this, it is obviously useless to consult our dialects only; we want some additional and more definite authority. I would therefore venture to recommend some such book as Sowerby's *British Wild-flowers*, in which an attempt has been made to reduce the common names to some sort of order. Sowerby's list, with respect to *Medicago*, is as follows:—

M. falcata (sickle medick). *M. sativa* (lucerne, or purple medick). *M. lupulina* (black medick or nonesuch). *M. maculata* (spotted medick). *M. denticulata* (reticulated medick). *M. minima* (little medick). *M. silvestris* (medick).

By adopting some such authority as this, and by carefully refraining from the use of any other, it ought to be possible to compile a list that shall be perfectly definite. Moreover, two names for the same thing should be discouraged. If, for *M. sativa*, the name of "lucerne" is acceptable, then "purple medick" must be dropped; or vice versa. In the case of *M. lupulina*, we should perhaps adopt "black medick"; and the useless name "nonesuch" should be abandoned. Perhaps it might be used for something else; unless, indeed, we adopt "black nonesuch" instead of "black medick," as is actually done in Norfolk. But surely a good botanist, with the help of a good botanical list, ought to be able to construct a new list which shall be universally accepted.

In any case, we can see clearly that, in the particular case of plant-names, our dialect names are usually worse than useless. It does not at all follow that they are either confused or useless in all other cases. Many of them are, I believe, worthy of much consideration.

In some cases Sowerby fails us. He explains *Ulex* by furze, gorse, or whin. For all three names are, in fact, equally good. Speaking broadly, and without being too precise, furze is the Southern, gorse is the Midland, and whin is the Northumbrian name for the same thing. Whichever term we were to adopt, it will be unacceptable to other dialects, in the proportion (roughly) of two as against one. In such a case, let the student enlarge his mind by admitting the facts. All three names are of vast and unknown antiquity; furze and gorse being native words, while whin is Norse.

In some cases, etymology and linguistic knowledge may help us somewhat. The forms "couch grass" and "quitch-grass" are both legitimate derivatives from the Anglo-Saxon *cwic* (also *cuc*), meaning "quick" or "living"; the grass being so named from the difficulty of killing it. But all the inferior by-forms, such as twitch, switch, skutch, and the like, should be suppressed. The form "couch-grass" seems to be, on the whole, the better known; and I would gladly accept Sowerby's explanations of *Triticum repens* by "couch-grass," and of *Agrostis vulgaris* by "fine bent-grass." Bent is a shortened form of the older *bennet*, which is scarcely needed; both forms were originally used of any coarse grass, and even with the sense of rush.

With respect to the word *bear* or *berre*, used in the North of England and Scotland with reference to barley that contains four (or six) rows of grain in the ear, it is the usual old Northern English name, used by Burns in his poem entitled "Scotch Drink":—

"I sing the juice Scotch bear can mak us."

It is a term of great antiquity, answering to the Latin *far*, with which it is cognate, just as the verb *to bear* answers to the Latin *ferre*. These two examples may help any one who is interested in the phonetic laws of language to remember that, whenever an English word beginning with *b* has a cognate Latin equivalent, the latter must begin with *f*. To adduce a third example, the verb *to bore* is the Latin *forare*. It is a remarkable fact that the Anglo-Saxon word for "barley" signified "bear-like," and was merely a derivative adjectival form deduced from an equivalent of the shorter form above.

But barley, or rather the aforesaid *bear*, is also called *bygg*. This is because a considerable number of words of Scandinavian origin have found their way into English, especially into our Northern and Eastern dialects; and it so happened that the grain which the English called by a name that is now dialectally spelt *bear* or *bere* was called in Old Norse *bygg*; and any good Danish dictionary, such as that by Larsen, will give "*Byg*, barley." These provincial names are necessarily spread, as a rule, over restricted areas; and it is desirable that the student should learn to include them in his vocabulary, in order that he may be more in sympathy with those who use such terms habitually. It is no more than is done by many a student of English, who has no special interest in agricultural details. These country names are frequently of great antiquity and deserving of much respect.

I suppose that *tares* and *vetches* are not much distinguished now. We have to remember that there was once a battle near Hastings which had great results; one of which was to fill our language with a large number of French words which we might never otherwise have known. Many of these are explained in my Concise Etymological Dictionary; where it is noted, for example, that the word *vetch* is not derived from the Parisian *vesce*, but from the form *veche* (from the Latin *vicia*), used in the Norman dialect as well as in the Walloon of the Netherlands. The native English words beginning with *v* were, in olden times, mostly to be found in the Southern dialects, which employed for example the words *vox* and *vixen*, where Northern dialects had *fox* and *fixen*; and it is not a little extraordinary that, in our literary dialect, we have selected the Southern *vixen* as the feminine of the Midland and Northern *fox*. Hence it was that our Northern dialects turned *vetch* into *fetch*, or occasionally *fitch*; and those who are best acquainted with our Authorised Version of the Bible will recognise what is meant in Isa. xxviii. 25—"doth he not cast abroad the fitches?"

Turning to Wyclif's version of the Bible, we find, in the same passage, the spelling *fetchis* (in the later version); but if

we turn to his version of Matt. xiii. 25, we find him using the plural form *taris* to translate the Latin *zizania*, or darnel. We even find the words compounded. Thus *tarefitch* is used in Cheshire and Shropshire, and *tarevetch* in Dorsetshire and the Isle of Wight, to denote various species of wild vetch, especially the tufted vetch and the hairy vetch (*Vicia cracca*, and *V. hirsuta*.)

"Finger-and-toe" is a term used in many Northern and Midland dialects to signify a disease in turnips that causes the bulb to run into branches instead of remaining spherical; and the reference is tolerably obvious. I am told that it is also sometimes called "club-foot," doubtless with reference to its distorted form. In Norfolk it is called *anbury* or *anberry*, less correctly *ambury*; and the same term is also used of a wart or spongy swelling on a horse. In Florio's Italian Dictionary, printed in 1598, the Italian word *moro* is explained by "a mulberry tree; also a wart in a horse called an anburie." There is little doubt that the original form was *ang-berry*, literally "painful berry." *Ang* is an Anglo-Saxon prefix related to a Gothic adjective signifying "compressed, tight, painful." It is fully explained in the New English Dictionary under the word *Agnail*, "a word of which the application (and perhaps the form) has been much perverted by pseudo-etymology." So much so, indeed, that it actually acquired an *h*, and became a "hang-nail," with a much varied and quite novel sense.

I am told that, after clover is cut for hay, "the second growth is known as aftermath, fog, ollands, stover, &c."

Aftermath means "that which is mown afterwards," or for the second time. Both *math* and *mead* are derivatives from a root signifying "to mow"; *math* is properly "a mowing," and *mead* means "that which is mown." It is a singular fact that the Anglo-Saxon word for "mead" had a dative case which has been preserved in the form "meadow"; and the Anglo-Saxon word for "shade" has the dative form "shadow." Fog, though sometimes used for aftermath, is properly coarse, rank grass; or, particularly, the long grass left standing in the fields during the winter. In a poem of the fourteenth century, we are told of Nebuchadnezzar, that he believed himself to be turned into a bull or an ox; he fares forth on all fours, and "fog" was his meat. Hence was formed the adjective foggy, abounding in coarse grass, mossy, boggy; hence, misty, giving off thick vapour; whence the word *fog* came to be used in a new sense, viz., that of mist or vapour, in which sense it is no older than 1544, however familiar it may seem to be now. Shakespeare so uses it, in *Macbeth*, Act i., Sc. 1,

"Olland" is simply a contraction of "old land," and merely refers to the fact that hay has already been got from it. "Land is sometimes sown with corn, grass, and clover together; after the corn and grass have been gathered, the clover which remains is fed off, and such land is called olland," and again, "land is called ollunt after the hay is taken off"; English Dialect Dictionary, s.v. Old-land. Young, in his *Annals of Agriculture*, ix. 429, speaks of "ollond, or lay of two years."

"Stover" is not a native word at all, but of Norman origin. The old French *estover* was nothing but a verb in the infinitive mood, and meant originally "to be necessary." Then it came to be used as a substantive, with the sense of "that which is necessary," or "a necessary supply," or, with regard to cattle, "fodder." It is specially interesting from its use in Shakespeare's *Tempest*, Act iv., l. 63:—

"Thy tuify meadows, where live nibbling sheep,
And flat meads thatch'd with stover, them to keep"

With respect to cutting corn, the word "fag" did not originally mean quite the same as "reap." The New English Dictionary and the English Dialect Dictionary both explain "fag" as signifying to cut corn by means of a sickle and a hooked stick; though the hooked stick is sometimes lost sight of. We read in the latter that in the West Midland district, the reaper, in fagging, works to and fro across the strip of corn he has undertaken to cut, pushing against the standing crop with his left arm, and severing portions of it by dealing sharp blows with the hook held in the right hand. True reaping should be done with the hand instead of the crooked stick. The reason why a reaping-hook is frequently called a sickle is simply because *sicula* is the Latin name for it, from the verb *secare*, to cut. Our ancestors borrowed the Latin word long before the Norman Conquest, cutting off the final *a*, and spelling it *sicol*. The old Anglo-Saxon version of the Gospels actually uses *sicol* in Mark iv. 29; and there is no wonder that we should be familiar with a word that has been in use for more than a thousand years without any appreciable variation in pronunciation. Many of our words vary greatly in sound now from the forms heard in the tenth century.

A grip is a term used in many dialects to signify a small trench or channel, drain, or small water-course, a narrow ditch, or even a rut. It is therefore not quite the same thing as a furrow, which refers rather to ploughed lands. This is not the right place for explaining Grimm's Law (as it is called), which tells us, among other things, that a Latin *p* corresponds to an English *f*, and a Latin *c* to an Anglo-Saxon *h*. It must suffice to say, dogmatically, that the Latin word *porca* corresponds, letter for letter, to the Anglo-Saxon *furh*, now spelt "furrow."

But, notwithstanding the identity in form, there is a remarkable difference in sense; the Latin word signifies the ridge between two furrows in ploughing, whereas the English word denotes the furrow (or trench) between two ridges. The same thing was denoted in Old French by the word which we spell *trench*. We must never lose sight of the Norman portion of our language.

The Latin for furrow was *sulcus*. But the literal sense of *sulcus* was merely "that which is drawn along," as it is allied to the Greek *helkein*, to draw along, in which the original *s* has been replaced, as is usual in Greek, by an aspirate; compare the Latin *sex* with the Greek *hex*. Hence it came about that the very same word *sulcus*, when done into Anglo-Saxon in the form *sulh* (*h* for *c*, as above) denoted, not the furrow, but the actual plough itself! Neither is the word extinct, for it is common in Devonshire and West Somerset in the form *zool*, and in several dialects appears as *sull*, the final guttural being lost. But in Gloucestershire it is *sullow*, where the *ow* represents the final *h*, just as in the case of furrow itself.

In Scotland "furrow-and-ridge" is replaced by "fur-and-rig," and this expressive phrase may be used of the ribbing in knitted stockings.

A furrow is sometimes improperly called a stitch or stetch. But, strictly, the latter term means a portion, piece, or fragment, and is particularly used of a portion of land, often very narrow, lying between two furrows that are parted by something wider than a ridge. The corresponding word in German is *Stück*, used of a bit or fragment of almost anything. But it has nothing whatever to do with a stitch in one's side, or the stitch made by a needle; these are connected with the verb *to stick*, as when we are talking of sticking pins into a pin-cushion.

A description of all the parts of a plough requires some technical knowledge, and is best learnt from books that describe their varieties, and that give illustrations of them. The excellent *Book of Husbandry*, by Fitzherbert, first printed in 1534, gives, in chapter 2, an account of their "dyvers maners"; in chapter 3, "the names of all the partes"; in chapter 4, "the tempryng of plowes"; and in chapter 5, "the necessary thynges that belonge to a ploughe, carte, and wayne." It was edited by me for the English Dialect Society in 1882. But many changes have been made since 1534.

WALTER W. SKEAT.

2 Salisbury Villas,
Cambridge.

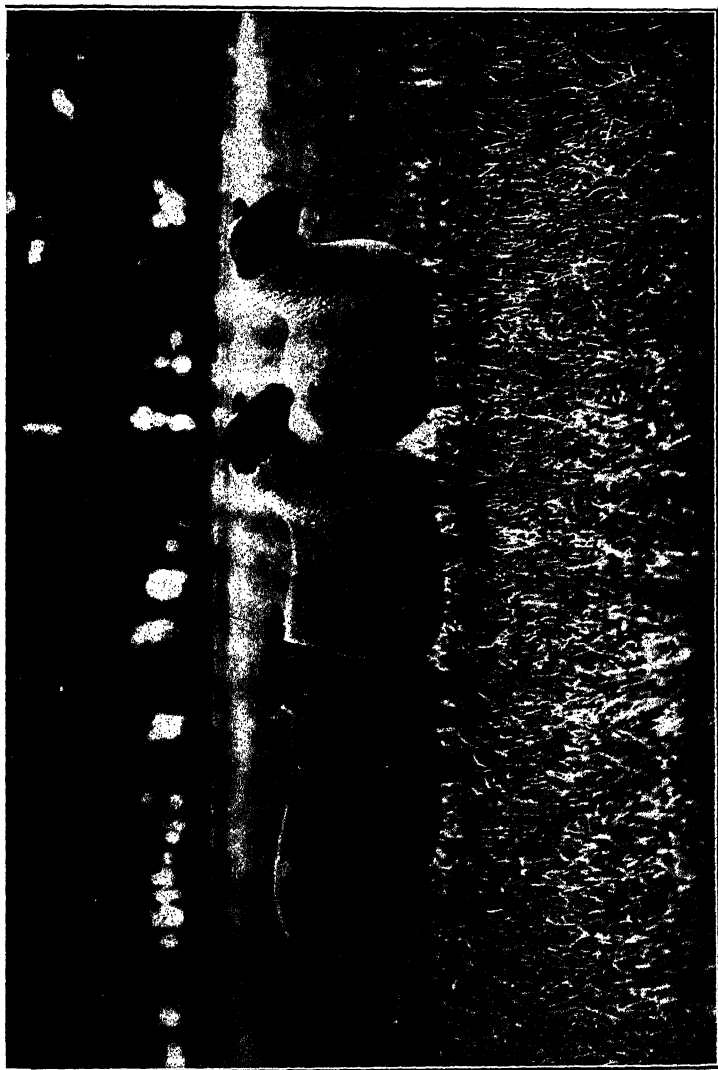
SUFFOLK SHEEP.

THE beautiful and useful breed of sheep, which is known as the Suffolk, has never until now had a signed article in the "Royal" Journal entirely devoted to it. Furthermore, owing to the fact that no "Champion" prize for them has been given at the Society's Shows, pictures of the Suffolk are not included in the series of very beautiful photographs of specimens of prominent breeds of sheep which from time to time adorn the volumes of the Journal. It is all the more appropriate that an account of the breed should appear in this issue, published as the Society is about to hold its Show at Norwich, for in 1886, the year when the "Royal" last visited this city, the breed, for the first time, had separate classes given to it by the Society.

Suffolk being the county in which there are most registered pure-bred flocks, and Essex, Cambridge and Norfolk also having many, East Anglia may well be said to be the home of the breed. In Norfolk, however, one might remark that nowadays most of the non-registered, but pure-bred flocks of Suffolk ewes are used to breed cross-lambs, being mated with Cotswold or Lincoln rams. The climate in the Eastern counties being very dry—the average rainfall is only about 26 inches—the permanent grass covers less than 25 per cent. of the whole cultivated area, and it follows that sheep are mostly on arable land, for which this breed is eminently adapted. Large flocks are kept on poor sandy soil which, in fact, it would be impossible to farm to a profit without the "golden-hoofed" sheep. Along the coast and in West Suffolk are large tracts of heath-lands, and on these Suffolk-ewe flocks spend a great part of the day, much to their benefit. They there get the exercise which is so conducive to health, and which is not to be obtained in the fold to which they return at night. What is equally important, they get a large part of their living off land where no other animals but rabbits and hares could exist, for they are excellent rangers and foragers.

HISTORY OF THE BREED.

It has been stated by the late Mr. Ernest Prentice, the well-known historian of the breed, in his Gold Medal article, published in the Transactions of the "Highland" for 1898, that "ample evidence exists as to the very general interbreeding of the Norfolk ewe and the Southdown ram during the earlier part of the century." It has often been said that these two breeds are the progenitors of the present-day Suffolk sheep. If this be so, possibly this excellent breed is the result



SUFFOLK SHEARLING EWES.

of an accident, for in the *Annals of Agriculture*,¹ we read, in an article on a "Tour to Mr. Bakewell's," by Arthur Young, "I cannot avoid mentioning a circumstance which happened with me during the present summer" [that is to say, the summer of 1784, for he publishes in March, 1785]. "I have a Southdown ram which Lord Sheffield was kind enough to give me from his flock at Sheffield Place for the purposes of experiment. This ram got, by accident, among a little flock of Norfolk ewes belonging to a tenant, the effect of which was his having seven or eight lambs of an entirely different breed from all the rest. His lambs were drawn fat by the butcher early in the summer, who, when he came to make choice, drew every one of Southdown breed before he took a single Norfolk, declaring at the same time they were by much the fattest of the flock. The farmer applied to me immediately to save him a ram lamb, but they were already cut. Next year I shall certainly supply him." In a foot-note, the author says, "He has got the ram, and I have made other trials on the Southdown breed, which I intend to lay before the public."

We may now glance over some of the earlier accounts of the old Norfolk breed of sheep that has now practically disappeared, so that little first-hand evidence is now obtainable. Mr. Marshall, in his *Rural Economy of Norfolk*, published in 1787, describes these sheep as being of a long and slender carcass, with long legs and a short, fine fleece. Both sexes had horns, those of the rams being large, long and spiral. Their loins were wide, their hind-quarters of a suitable size, but their fore-quarters were deficient. He admits that some of the breed had not the general defects of the race, and goes on to praise them for their hardiness, their folding well, early fattening, and the superior flavour of their mutton.

Arthur Young, writing on the "Agriculture of the County of Norfolk" in 1804, tells us that Norfolk and Suffolk had for ages possessed a breed of sheep of which the farmers were extremely proud; that their fleece was "third in the Kingdom for fineness," but that their shape was bad. He also quotes a Mr. Kent concerning the hardy, active character of the Norfolk sheep.

W. C. Spooner² and David Low³ both speak of the activity of the Norfolk sheep, while the latter author testifies to their hardiness and suitability to a country of scanty herbage, as well as to their travelling and folding well. Nearly all the above writers give emphasis to the dark face and leg colour

¹ Vol VI (1786 A.D.), page 476

² *The History, Structure, Economy and Diseases of the Sheep*, W. C. Spooner, V 8, 1844

³ *The Domesticated Animals*, 1845.

of the Norfolk, which was, as a breed, often written of as the "black face." This very dark face and leg colour seems to have been very typical of the active, hardy, lean-fleshed Norfolk, with its well-flavoured mutton.

The above will give some idea of the character of the old Norfolk sheep, and it was felt, as early as the last quarter of the eighteenth century, that efforts should be made to improve it in certain directions. Thus, Arthur Young, in the above-mentioned work, tells us that he had twenty-six years' experience of the breed, and at one time esteemed them most highly, but that later, having doubts about them, he began the import of what he considered the best sheep for the purpose, viz., Southdowns, into Norfolk and Suffolk. This he did, beginning in 1784, and by 1790 had 350 of them.

Southdowns soon became common in East Anglia. In 1792 Mr. John Ellman sent Arthur Young a haunch of Southdown mutton from Glynd, which the latter and his friends found "incomparably good." This same Arthur Young¹ tells us also that in that same year, when at Mr. Coke's, at Holkham, Norfolk, he was shown some Southdowns that Mr. Ellman had sent to his host, who was "determined to fix a capital Southdown flock in the county, that the merits of the breed may be thoroughly ascertained." Later on, we read that "upon the death of the Earl of Oxford, Mr. Calhoun purchased the whole flock of Southdowns, which had been originally selected in Sussex by the late Mr. Macro, of Barrow." There were 300 head in this flock. At Riddlesworth (Mr. Bevan's) Arthur Young found a complete Southdown flock—thirty score—and a similar flock of Norfolks, and the owner was crossing the two breeds.

There are other indications that, by the year 1794, Southdowns were fairly common in Norfolk, and in the *Annals of Agriculture* for 1793, in "A Week in Norfolk," by the editor on page 491, we read "Southdowns being well established in Norfolk and Suffolk, Black-faces will go down hill quickly." Though the old Norfolk has been superseded by the Suffolk sheep, we know that the actual Black-face has been retained as a much-valued heritage.

The Southdown which, as we are bound to believe, took a large part in the creation of the modern Black-face, is with us still, and its good points are so well known that it is needless to detail them. The most casual observer has probably noticed what a suitable mate the small Southerner must have made for the Eastern Counties sheep. The Southdown was "kindly" and short-legged, the Norfolk was active and had an abundance of lean meat. The Black-face was long in the leg and narrow

¹ *Annals of Agriculture*, Vol XIX, "A Week in Norfolk," pp. 446 *et seq.*

of carcass ; the other was wide and deep-bodied on short legs. The gentle disposition of the Down was also required to modify the great constitutional vigour of the horned sheep, which was, so it seems, associated with some ferocity. In the *Live Stock Journal* for 1885, we find, on page 220, an extract from the *East Anglian Daily Times*, in which it is stated that "Mr Joseph Smith, of Hasketon, remembers, when a boy, how the Norfolk rams belonging to his father used to knock down the shepherd, for these horned sheep were very pugnacious."

To the credit of a past generation of East Anglian flock-masters, it may be said that, while keeping all that was of value in the Norfolk, they added to it many points previously wanting, which they got mostly from the Southdown, but possibly from other varieties as well, for history offers some suggestions of such having happened, and the resultant product eventually became known as the Suffolk sheep. To make this historical summary more complete, we may quote Mr. Hugh Raynbird, who, writing "On the Farming of Suffolk" in the R.A.S.E. Journal for 1847, says, "Breeding sheep are chiefly a cross between the Down and the old Norfolk," there being no doubt, from the context, that by "Down" Mr. Raynbird means the Southdown.

We learn from the S.S.S. Flock-book that by 1859 these cross-breeds had been christened "Suffolks," and that classes were provided for them as such at the Suffolk County Show. In a recent communication, Mr. W. K. Bond informs me that he has before him copies of the catalogues of the Suffolk Agricultural Show for the years 1858 and 1859. In the former year, the classes were for "Black-faced Sheep," in the latter for "Black-faced *Suffolks*." The 1858 Show was at Bury St. Edmunds, and that of 1859 at Ipswich.

In 1886 we get some independent testimony of the progress of the breed. Mr. W. J. Moscrop, in his report on the Farm Prize Competition in Norfolk and Suffolk (R.A.S.E. Journal, pp. 574-5), says: "In the breed of sheep within the present century there have been greater changes and improvements even than in the cattle." The writer who had, earlier in the report, given much credit for the improvement noticed in the horned stock of the counties, gives now some history of the making of the breed, and goes on to say that "the result of crossing the old Norfolk with them" [the Southdowns] "was the creation of a new breed possessing the good qualities of both. . . . The breed is now known as the Suffolk. . . . The mutton is reported to be worth fully a penny more per pound than that from the long-wool cross, and so famous has it become that gentlemen of the Turf frequenting Newmarket

and testing it there are having it sent to their London houses." A little later he says of the sheep: "They are also very prolific breeders and excellent milkers, and are very much in demand for crossing purposes"

In treating of this part of the subject, the writer is reminded of a historical reminiscence of his own. In the early days of his breeding operations he had the assistance of a shepherd—George Last by name—who had taken part in the making of the Suffolk when he worked for the late Mr. Tom Crisp, a very noted East Anglian agriculturist. During the several years that Last was in the writer's service they had many conversations on this matter together. He is happily alive and still in service, and the following letter, giving his present-day opinion, may bring the matter more vividly before the reader. The time about which Last is speaking was probably about fifty years ago:—

Tunstall R & O,
Suffolk
Nov. 30th, 1910

DEAR SIR,

I duly received your letter of the 28th inst., "*re* Suffolk Sheep," and, as requested, have spoken to my shepherd, George Last, respecting that time when he was shepherd's page on the Butley Abbey Farm with the late Tom Crisp. You are quite right; he well remembers telling you that the Suffolk sheep originated, in the first instance, by cross-breeding horned Norfolk ewes with Southdown rams, and instances his experience when with the late Mr. Crisp. He tells me, as far as he remembers, the lamb came much less black in the face, and with more the bodies and wool of the Southdown, with a tendency to slug horns. Having left Butley Abbey and the employment of Mr. Crisp, after a few years' service, he could not say if any other breed of sheep was introduced and mated to the offspring of the above on the Butley Abbey Farm.

Last relates that Mr. Crisp bought the flock of forty score horned ewes at Mr. Catlin's sale, and that there were also two other flocks of forty score horned Norfolks, namely, at Eyke Rookery Farm and the Chapel Green Farm.

Yours faithfully,
(Signed) JOHN GODDARD, Sen

Since the "Royal" gave the breed its recognition by establishing separate classes for it at their Show in 1886, its history is recorded in the successes which, as we shall show later on, it achieved at Smithfield and elsewhere, as well as in the prices obtained at many sales and in the continuous demand from abroad for our best stock.

POINTS OF THE BREED.

The hair on the face and legs below the knees and hocks should be glossy, jet black, fine, and free from any coarseness of hair. Breeders are very particular as to this texture and colouring, and rightly so, for it denotes quality and gives a smart thoroughbred appearance. Further, it almost invariably

follows that this, one of the most distinctive features of the breed, proves to be associated with sheep having the character of good mothers and milkers, as well as showing them to be animals which, when butchered, cut full of lean, juicy flesh so desirable on the table.

SCALE OF POINTS.

Published by the Suffolk Sheep Society.

Head. —Hornless: Face black and long, and Muzzle moderately fine—especially in ewes. (A small quantity of clean white wool on the forehead not objected to.) Ears, a medium length, black and fine texture. Eyes, bright and full	25
Neck. —Moderate length and well set (In Rams stronger, with a good crest.)	5
Shoulder. —Broad and oblique	5
Chest. —Deep and wide	5
Back and Loin. —Long, level, and well covered with meat and muscle. Tail broad and well set up. The ribs long and well sprung, with a full flank	20
Legs and Feet. —Straight and black, with fine and flat bone. Woolled to knees and hocks, clean below. Fore legs set well apart. Hind legs well filled with mutton	20
Belly (also Scrotum of Rams). —Well covered with wool	5
Fleece. —Moderately short; close, fine fibre, without tendency to mat or felt together, and well defined, <i>i.e.</i> , not shading off into dark wool or hair	10
Skin. —Fine, soft, and pink colour	5
Total	100

As the above "Scale of Points" may not be sufficiently detailed for those readers who are not familiar with the Suffolk sheep, the following explanations are given, in the hope that they may prove useful:—

The Ram.—The Suffolk ram should have a bold, free carriage, and show great masculine character throughout. The head, covered with fine glossy, jet-black hair, which should on no account show any coarseness in texture, should be distinctly aquiline (or Roman-nosed) when seen in profile. The ears, which should be wide apart and well-carried, must be thin and pliant in texture and on no account large enough to give the head an ugly appearance. The frontal bones, without being too prominent, should be well-developed and clear cut, thus

making a well-defined setting for the dark, bright, intelligent eye. The depth of head from the eye-socket to the angle of the lower jaw should be great. The lower jaw should be well sprung, and stand out free from any loose skin, that is to say, it should show no tendency to run into the neck. Seen full face, the ram's head should show great width over the eyes. The line of head from between the eyes to the nostrils should show width without any tendency to coarseness. The mouth should be large, but the lips should be closely applied to the jaws—any looseness of lips or any "throatiness" at the jaws takes away greatly from the thoroughbred look. The general effect is a clean-cut, blood-like head, combined with a general impression of strength and constitution.

It may be well to remark that the head of the Suffolk is not as heavy, nor, when seen from the front, as wide as that of the Hampshire. It is not straight in profile like the Oxford, and it is further different from all sheep of the same class, in that it has no wool on the "face;" a little tuft of white wool on forehead is not objected to, but most breeders prefer a perfectly clear face. The well-cut dark head, covered with glossy black hair, stands out in marked contrast with the white fleece of the neck, in such a manner as to give this breed a very distinct individuality.

A tendency exists, doubtless due to the Norfolk progenitor, to "spud-horns" in the breed. Male sheep showing these small horns are to be avoided for pure breeding.

The head should be well set into the neck; the back and loins should be strong, wide and firm. The ribs should be so well sprung that the flesh will be found to be level with or rising above the back-bone. The dock must be broad, thick, and well covered with firm flesh. The hind legs must be well filled.

Most important of all, the Suffolk ram must stand well on his legs, and have true, sound joints. Great size is not so desirable as type perfection in points and symmetry. The dam should have width and size of frame, the sire quality.

The Ewe.—The head should be distinctly feminine, with a full bright eye. It should be long from the eye to the muzzle, which should be fine. The fore-quarter should not be as heavy as in the case of the ram. Formation at shoulder or more accurately over the shoulder is much insisted upon by Suffolk breeders, and in this respect probably they differ from some of their colleagues who rear other varieties. In a lecture¹ on Sheep-breeding given by the late Mr. Hy. Lingwood, C.C.

¹ Lectures delivered to shepherds at Needham Market, November and December, 1898, published at Ipswich by S & W J. King, Princes Street, for the East Suffolk County Council Technical Instruction Committee.

for the East Suffolk County Council, the speaker remarked "the shoulder blades [should be] tightly fitted to the vertebræ or bones of the neck, which should, when the sheep is standing at ease, be well above the shoulder blades." It is obvious that Mr. Lingwood meant to say "vertebræ or bones of the BACK." It is the spines of the dorsal vertebræ or what we should call the withers in the case of the horse that should so stand up. Many flock-masters would not approve of these (the withers) being "well above the shoulder blades," but the writer is in full sympathy with the opinion, for he believes an open, wide, loose joining of shoulder blades to the backbone is not present in the case of an ewe which milks well, and this characteristic is one of the greatest qualities a Suffolk breeder desires. No Suffolk sheep man wants his ewes to be narrow, or sharp, or high over the shoulder. He does, however, require the shoulder-blades to slant upwards and join in tightly and neatly on the top with the backbone, so that there is no open or hollow space between the spine and the shoulder-blade on either side. The broad and oblique shoulders coming up in this way to the spine hold the body well together, and give great activity and graceful movement. If the Suffolk ewe ought to be fine over the shoulder, she should be big over the loin, stand wide when viewed from behind, be full over the quarter, and have a good shaped udder: all these points denote fecundity as well as good milking qualities, which are among the chief merits of the breed.

Making some general remarks on the points of the breed, I would observe that the carcass should be long, level, and well balanced, with great depth and heart girth; the back well coupled with the hind quarters; and there cannot be too much flesh or muscle. The neck should be well set, joining on to the backbone in a uniform line—not hung on in "dromedary" fashion as is sometimes seen, though this fault is nowadays much less frequent than formerly. Breed for a deep chest with well sprung ribs giving heart girth. If the ribs are deep, besides being well sprung, and the flank is well let down, the under line will be level, which is always a sign of quality and constitution. The tail should be strong, broad, and well set up. The legs of mutton should be full and well let down, but there should be no fatty patchiness on the rump.

Wool.—The fleece should be dense, close, and fine, with a fair length of staple. Locky, matty, or open wool should be avoided. The scrotum and belly should be well covered. The black face and legs do undoubtedly give a tendency for dark or grey wool to appear on the neck near the head and above the hocks. This is a defect which must be eradicated

in all Suffolks, as it has already been in the best flocks. The average weight of fleece (first year clip) is, on the good soils, about 8 lb. of washed wool. Ewes will clip from 5 to 7 lb., and rams up to 14 lb.

Fecundity.—No account of the Suffolk sheep would be complete without a reference to the great productiveness of the variety. One of the great merits of the ewes is that while they have the power of earning a living on a wide range of poor pasture when empty or not far advanced in pregnancy, they are also capable of converting a large amount of food into milk when suckling their lambs. It is necessary that this should be so, for otherwise the very large number of "doubles" and even triplets which are dropped could not be reared with profit. Lambing returns received by the Suffolk County Agricultural Association are therefore given below. The following figures represent entries from registered Suffolk flocks only :—

Date	Total Number of Suffolk Ewes from registered flocks in the Competition			Average Number of lambs weaned from each 100 ewes		
1900	3,033	...	...	153 28
1901	2,146	...	...	150 56
1902	3,076	...	...	151 27
1903	5,452	...	...	158 49
1904	2,959	...	...	158 06
1905	3,967	...	...	153 34
1906	2,676	...	...	150 60
1907	4,903	...	...	154 15
1908	5,474	...	..	149 91
1909	6,681	...	...	153 67
1910	5,459	...	...	145 58

In the above competition one instance is on record of a flock of 310 ewes yielding 183·23 per cent.—in this, as in all the above cases—of weaned lambs.¹ In the same competitions the record of losses among the ewes, from time of turning in the rams till weaning, is practically 2·5 per 100 ewes mated. These figures clearly demonstrate the excellence of Suffolks as nurses, and the stamina shown by them when producing their offspring.

SHOWYARD DISTINCTIONS.

The merits of a variety of sheep are well tested by the Carcass Competition at Smithfield Show, for we find all specimens of the short-woolled breeds contesting for the honours one against the other, and of the two judges who make the awards in these classes one is invariably a meat salesman of repute. Therefore the following list of honours shows the Suffolks to be mutton producers of the highest quality :—

¹ To be exact, the rule is "reared to May 1st."—S.R.S

Class for Wether Lambs of any short-wool breed. First prize to Suffolks ten years running, *i.e.* from 1900 to 1909 inclusive.

Class for Wether sheep (under 24 months old) of any short-wool breed. Suffolks won first prize from 1900 to 1904 inclusive, and again in 1907 and 1909.

A champion prize, for which all pure breeds or cross-breeds compete, is given for the best carcass in the yard. The Suffolk had this champion award for 1902 to 1906 inclusive, and again obtained it in 1908.

The following interesting figures have been compiled by the secretary of the S.S.S. from published accounts giving the weights recorded for the Suffolk entries at the above competitions:—

WETHER LAMBS (under 12 months old).

Date		Live Weight	Carcass Weight	Fat	Pluck	Skin	Average Percentage of Dressed Carcass to Live Weight
		Lb	Lb.	Lb.	Lb	Lb	
1906	10 entries averaged	136	86	9	5	12	63.24
1907	16 " "	140	90	9	4	13	64.29
1908	8 " "	143	89	8	5	15	62.24
1909	11 " "	145	89	10	5	16	61.38
1910	9 " "	142	90	8	5	13	63.38
Average		141.2	88.8	8.8	4.8	13.8	62.91

WETHER SHEEP (under 22 months old).

1906	5 entries averaged	193	129	12	5	15	66.84
1907	5 " "	171	112	12	5	12	65.50
1908	5 " "	157	102	11	5	14	64.97
1909	3 " "	191	123	15	5	15	64.99
1910	5 " "	183	119	13	7	13	65.03
Average		179	117	12.6	5.4	13.8	65.35

The live-weights of the lambs shown at Smithfield are very instructive, for they are evidence of the great power of early maturity which the breed possesses. We therefore give the following table, which speaks for itself.¹

¹ Since the above was written a pen of Suffolk lambs has won the Championship of the yard for 1910 at Smithfield. Age, 9 months and 3 weeks; live weight, 5 cwt. 3 qr. 7 lb. This pen also won the Championship at Norwich and Ipswich.

WETHER LAMBS (under 12 months old).

Date	Average Weight (pen of three)		Average Weight (per lamb)	
	Lb		Lb	
1906 . . .	562	..	187	3
1907	617	.	205	6
1908	637	...	212	2
1909	622	...	207	3
1910	615	..	205	0
Average ...	610	6	203	5

Management.—There is no doubt the pure-bred Suffolk does best on arable land and upland pasture. The breed does not show to the same advantage on marsh or wet or heavy land pastures as some of the white-faced breeds. Still, on such pasturage, the Suffolk makes a good sire to cross on suitable ewes, in fact, it is not easy to put Suffolk crosses in the wrong place. The “tegs” or hoggets, as lambs are called locally from 9 months old until they are clipped, when pushed on in their own district on arable land, are a credit to any flock-master when they are brought to market from September to March. At Ipswich, Newmarket, and Bury St. Edmunds there are a great number of such Suffolks penned for the September and October markets. Butchers give quite as much per lb. for these sheep as for any other, in fact, weighing as they do from 70 to 90 lb. carcass weight, and being full of lean meat, they often make more than anything else—large sheep are quite neglected while these can be obtained.

These tegs have kale cabbage, swedes, or kohl-rabi on the arable land with plenty of trough food. But while they want plenty of good food, they do not require constant daily change of fold to stimulate their appetites, for the Suffolk is a very hearty feeder and kindly doer. The following is an account of the system of management on light land farms where such tegs are reared in large quantities in East Anglia, ram breeding not being the object in view.

It used to be the custom to turn several rams in with the entire flock of ewes, but of late years it has become more common to divide the ewe flock up into small lots, and put a single ram with each separate group. No doubt this is a much wiser plan, for by so doing the individual produce of each ram is known. At the time of mating, it is usual to “flush” the ewes by providing a fold of rape, or as it is called in East Anglia, “coleworts,” or of kale, or mustard, or cabbage. The object of this “flushing” is to bring the ewes into a lusty condition conducive to a good crop of lambs. The rams are put to the ewes any time from October

1st to 11th, so that lambing does not begin, as a rule, until there is a fair prospect of the spring feed making a start. During the day the flock will come off the fold of "coleworts" or other forcing fodder crop, and have a run out on "layers," grass or stubble. When good sound marshes or upland pastures that have been cattle fed are available, mating frequently takes place on them, and the ewes on such land for four or five weeks are found to do equally as well as those on the arable. In November the ewes will commence feeding the white turnips which will be their mainstay during December, January and February, on which they will be folded at night running out on grass during the day-time. During these months the heath-land is found very useful, especially during a wet season: it cleans their feet, gives them exercise so necessary for breeding animals, and keeps them in good health. Some land which is thought or known to be unsound for sheep when fed with turnips, has to be cropped for the ewes with cabbage and kale. For a month or six weeks before lambing, the ewes get trough food consisting of a mixture of linseed and cotton cake with crushed oats or bran, from $\frac{1}{2}$ to $\frac{3}{4}$ of a lb. of this mixture is given per head. With such feeding the ewes come strong to the lambing pen, and give plenty of milk. It is often found beneficial, for a short period before lambing, to give some mangold to the flock, about a cart-load for 200 ewes thrown out for them on the grass. These have the effect of keeping their bowels in a nice healthy condition.

In March, a lambing pen, such as has often been described, is formed of hurdles thatched with bracken, or failing this fern straw, is provided as near the supply of growing fodder as possible.

During the lambing time, the ewes lie in this yard at night. As soon as lambs are strong enough, they and their mothers go out on to the fodder crops, the ewes getting the trough food as before, only now in increased quantity, about 1 lb. per head per day. Lamb hurdles or "creeps" are set up so that the young ones can run on forward getting the pick of the feed; they will also be provided with small covered troughs in which is put the usual mixture.

Ewes with twins have a run out on the rye or mixed layers in addition to the ordinary fold of fodder crop given to the whole flock.

By April turnips will be finished, and kale or early cabbage ready, and a piece of early Italian rye grass and trefoil should be available. These with mangold form the main diet with a run out on rye and mixed layers and grasses. As the lambs take readily to the trough food, that of the ewes is gradually

diminished. Lambs will receive up to 1 lb. of cake and corn per head. In July preparations are made for the sale of the lambs, which usually takes place this month, in a market or to a dealer. To give them a nice finish and present them with a good bloom, nothing is better than a fold of coleworts or kale, with a run on white clover or sainfoin layer. Often the whole crop of lambs is sold, but many flock-masters keep back their best ewe lambs to make up their flock.

The following is a list of prices actually obtained by a well-known breeder for lambs born in January, February, and March :—

1906 (July 12)			1907 (July 11)			1908 (July 9)			1909 (July 8)		
Lambs	s	d	Lambs	s	d	Lambs	s	d	Lambs	s	d
20 Ewe ...	70	0	25 Ewe ...	78	0	19 Ewe ...	80	0	25 Ewe ...	78	0
20 " ...	57	0	25 " ...	70	0	20 " ...	76	0	25 " ...	72	0
50 " ...	45	6	50 " ...	58	0	50 " ...	64	1	50 " ...	61	0
50 " ...	48	0	50 " ...	53	0	50 " ...	61	0	50 " ...	59	0
50 " ...	44	0	50 " ...	47	6	50 " ...	52	6	50 " ...	48	6
50 " ...	43	0	50 " ...	47	0	50 " ...	47	0	50 " ...	48	0
45 " ...	37	6	50 " ...	42	0	50 " ...	40	0	50 " ...	41	0
20 Wether ...	47	6	50 " ...	39	0	56 " ...	38	0	50 " ...	39	6
20 " ...	46	0	25 Wether ...	57	6	25 Wether ...	49	6	50 " ...	34	0
50 " ...	41	6	25 " ...	47	6	50 " ...	45	6	25 Wether ...	44	6
50 " ...	39	6	50 " ...	45	6	50 " ...	41	6	25 " ...	43	0
50 " ...	40	6	50 " ...	44	0	49 " ...	40	6	50 " ...	39	6
49 " ...	38	0	50 " ...	43	0	49 " ...	38	0	50 " ...	37	6
49 " ...	33	0	50 " ...	43	0	51 " ...	38	6	50 " ...	35	0
			50 " ...	40	6	80 " ...	32	6	50 " ...	32	6
			34 " ...	33	0				50 " ...	31	6
									50 " ...	27	6

AVERAGE OF PRICES ABOVE

Lambs	s	d	Lambs	s	d	Lambs	s	d	Lambs	s	d
285 Ewe ...	46	2	350 Ewe ...	51	6	345 Ewe ...	53	4	400 Ewe ...	50	7
298 Wether ...	39	8	354 Wether ...	43	6	354 Wether ...	39	4	350 Wether ...	35	0

After the lambs are taken from them, the ewes are kept on very short commons until the milk is dried up, any that show signs of their udders getting too full are partially milked out; failure to do this is often the cause of one-sided sheep.

Except that they begin to lamb much earlier in the year, generally in the first week or so of January, ram-breeding flocks are kept in much the same way. Greater care is of course taken with the mating, and more attention is given to marking the produce.

Exportation.—Many Suffolks have been sent abroad to France, Germany, Spain, Italy, Russia, Switzerland, North and South America, Canada, Australia, and South Africa. In the Transvaal on the Government stud farms, they have done particularly well, rams from the pure bred flocks there making very remunerative prices. This clearly shows how great is their adaptability for thriving in various climates.

Prices obtained at Public Sales.—Very few yearling and older rams are offered for sale; at the principal sales from registered flocks in 1910, the prices obtained were:—

Locality and Date	Description.	Total Number.	Prices obtained.	
			Average.	Highest.
Ipswich, August .	Ram Lambs .	350	11 <i>l.</i> 7 <i>s.</i> 4 <i>d.</i>	90 <i>gns.</i>
" " .	Yearling Ewes	2,386	3 <i>l.</i> 4 <i>s.</i> 8 <i>d.</i>	7 <i>l.</i> 0 <i>s.</i>
Newmarket, August .	Ram Lambs .	227	7 <i>l.</i> 12 <i>s.</i> 11 <i>d.</i>	41 <i>gns.</i>
Sutton, July 8th .	Ewe Lambs .	3,113	1 <i>l.</i> 11 <i>s.</i> 6 <i>d.</i>	2 <i>l.</i> 11 <i>s.</i>
Great Bentley, July 14th	" "	1,454	1 <i>l.</i> 16 <i>s.</i> 2 <i>d.</i>	3 <i>l.</i> 7 <i>s.</i>
Kesgrave, July 22nd .	" "	1,921	1 <i>l.</i> 15 <i>s.</i> 4 <i>d.</i>	3 <i>l.</i> 0 <i>s.</i>

Much higher prices have been made previously. In 1898 at a dispersal sale of a noted flock—

Two shear rams made up to 68*l.* per head.

Shearling rams made up to 48*l.* per head.

Ram lambs made up to 63*l.* per head.

Shearling ewes made up to 15*l.* 10*s.* per head.

Two shear ewes made up to 26*l.* per head.

The following year, 1899, at the Ipswich Special Sales, one ram lamb made 152*l.* 5*s.* and another 105*l.*

The *Suffolk Sheep Society* has flock competitions annually, and every flock is subject to inspection once in four years. This practice has a great tendency to obtain uniformity—which is so desirable—and also to keep up a high standard of excellence. Full particulars of such competitions can be obtained from the Secretary, 25 Marlborough Road, Ipswich.

Crossing.—Suffolks cross well with many other pure bred sheep, particularly with Lincolns and Cotswolds, improving the mutton quality of these long-woolled sheep. They also mate well with the Southdown and Cheviot. The former cross makes a nice compact sheep, a great favourite with butchers.

The Cheviot cross is an excellent one, many honours having been won by those who practice crossing these two breeds in the carcass competitions at Smithfield. On three occasions, the only times that the chief award has gone to lambs, Suffolk crosses have won the Championship of the Yard at the Edinburgh Fat Stock Show.¹

Starting a Flock.—It almost goes without saying that it is very important to start well. Perhaps one of the best ways is to buy a good lot of ewe lambs from one flock, or if all

¹ Since writing the above, we hear that Suffolk Border Leicester lambs have won Championship of Yard in Edinburgh and Championship for cross-breeds in London.

cannot be obtained from the same, from flocks of similar character. Keep such lambs thoroughly well until the following summer, then draft the least desirable. The ones to be drafted are those with weak wool, badly set-on necks, narrow or drooping rumps, or those low behind the shoulder. Those standing badly on their legs or joints should most certainly be rejected. Sheep which are speckled should be avoided—some Suffolks show this fault. No doubt it is inherited from their past progenitor the Norfolk, so it should be guarded against. It consists of small white spots at the base of the ear, on the neck, and under the forearms.

Having done the drafting, a uniform lot of ewes should be left to start breeding with, and a good start is half the battle.

Another and a quicker way, if it can be managed, is to buy the best draft ewes from a really first-class flock. This practice, however, is much less easy to follow out, for the Suffolk sheep breeders of repute, in contradistinction to the customs of some flock-masters in other localities, keep all their best ewes until they become "crones" or have bad teeth. For they find there is nothing like sticking to their good old sheep for breeding high-class rams. It may often be noticed that at a dispersal sale good full-mouthed ewes will command a good price, sometimes as high as any in the sale.

In the selection of the rams extreme care should be taken as the male "is half the flock" and he often has more than half the result to his credit, or otherwise, in the appearance of the progeny. So that a beginner is well advised who decides to select his rams from long-established flocks of high standing and good reputation. He should never buy a sire without a most thorough and close inspection, the sheep should be overhauled thoroughly and his credentials examined in detail both as to formation and pedigree.

Line-breeding.—Harm is often done through not paying enough attention to this consideration. Mixing up a lot of differently bred strains indiscriminately never tends to form distinct and correct type. The use of a sire so bred is never effectual but for harm. *Careful in-breeding, with judicious selection for constitution and stamina*, is the fundamental practice of the successful breeder.

S. R. SHERWOOD.

Playford, Ipswich.

THE DEVON PACK HORSE AS AN ARMY HORSE.

THE NATIONAL HORSE SUPPLY.

DURING the past year there has been copious correspondence in the press on the national question of the horse supply during times of peace and war, which has met with the satisfactory result that for the first time in our national history, unless the King's Premium grant can be so termed, an annual Government grant is to be devoted to horse breeding.

It is true that an annual sum of 40,000*l.* may seem but a paltry amount wherewith to carry out such a vast and necessary project, and though horsemen must grumble and continue to ask for more, let them console themselves that a start has been made, and that great undertakings spring from small beginnings.

Although we may all have our own ideas as to how a grant may most successfully be applied to attain its end, our remarks on this point will be but brief, for my object of encroaching on these columns is to plead for the revival of the Pack horse, which I am convinced is, of all the various types to be found in these islands, the most required for the horsing of our army.

Now the Pack horse is almost extinct, and with the death of the remaining half dozen stallions and 100 pure and half-bred mares only its history will remain to us as a monument of National Neglect.

In a few years hence, when State-aided horse breeding has made some advance, it will be found that a type of horse identical with the Pack horse is required for our army, but the breed being then extinct, much time, labour, and money will have to be devoted in breeding a modern imitation, which when created will no doubt fill the gap with a fair amount of success, but will be without some of the most sterling characteristics of the old breed.

We have learnt from the life work of Robert Bakewell, and other scientific breeders of live stock, that it is possible even within a few generations to create by judicious crossing a new type from former existing breeds, and that this newly established breed will eventually, as it is expressed, "breed to type." No doubt this is true as far as form, contour, weight and colour is concerned, but we have yet to learn how to breed for stamina, pluck, vim, endurance, temper, and grit. With some animals, such as sheep and horned cattle, such attributes, though desirable, are not absolutely necessary, but with horses such innate characteristics are as necessary as shape, conformation, soundness, for have we not all met with perfectly shaped

horses that are absolutely useless, owing to a "pain in the temper," "want of heart," and some unaccountable deficiency of "stamina"?

Now in the old breed of Pack horse these inherent virtues, so unaccountable but desirable, are more universally met with than in any other of our insular breeds, and if any effort be not now made to save the breed, these characteristics, which are "born, not made," will be lost to us, for though after the lapse of some considerable time, and the expenditure of much money, a type similar in outward form may be established, it is most improbable that by any means at present known to breeders these ever valuable equine attributes of endurance, stamina, and pluck, without which the most perfect form is comparatively or wholly worthless, will be re-produced. Is it not therefore more worth the nation's while to seize this last opportunity of saving the old breed and its inherent characteristics, which can now be accomplished with but a small expenditure of time and money, than to spend ten times the time and ten times the money in filling the gap with what after all will be but an "inferior imitation"? Is it not cheaper to "save" than to attempt to create?

HISTORY OF THE PACK HORSE.

In these many letters on the national horse supply appearing in the daily and weekly press I have seen but occasional mention of this old breed, which above all others is the most typical and necessary army horse, possibly because it is thought to be extinct.

The Pack horse, I shall endeavour to show, is the foundation stock of the breeds of these islands, the same as the old writers described the English great horse, or black horse.

I find that in the early years of the eighteenth century, about 1700 to 1750, the same Eastern blood that was used to improve our then breed of "Running Horses" was used to improve other breeds, for in my pedigrees of living Devon Pack horses I find far back the names of the *Darley* and *Godolphin* Arabians, *Marske*, and his great son *Eclipse*, *Blaze*, *Flying Childers*, and others. ●

Thus it would appear that Devon Packs and Thoroughbreds have in their evolution a similar history.

Although the name Pack horse is almost unknown at the present time, yet as recently as fifty years ago the breed was to be found in all parts of these islands.

From 1850-1880 mares and stallions were still to be found, though in ever diminishing numbers, in the south of Ireland, Wales, Yorkshire, Northumberland, East Anglia, Cornwall, and Devon. It is in the latter county, for various reasons afterwards



TRIUMPH II

One of the best of the pure bred Devon Puck Horses. Lion photograph taken when 15 years old
 Black 152 By Triumph I by Cottage I & C Pedigree book to 1775

to be mentioned, that the breed continued longest, and it was not until 1903 that the last pure-bred Devon Pack stallion was sold out of the county and exported to Australia, where he now is.

In this article I have mostly confined myself to a "certain family of Devon Pack stallions which belonged to the same yeoman family, and were descended in tail male since 1775," a period now covering 135 years. These pedigrees are now in my possession and are therefore as long as Messrs. Wetherby's "Pedigrees of our Thoroughbreds," and tracing back to the same Eastern sires.

There were also many other studs in Devonshire, one of which boasted of *Katterfelts* and *Mazepa* blood in their veins. These somewhat mythical stallions are fabled to have been of Arab or Spanish blood, to have roamed on Exmoor, and to have left their "trade-mark" on all the West-country breeds; but whatever they may have been, their mark appears in the dun body colour and the donkey stripe or black lash down the back. The last of these dun Pack stallions, *Astonisher*, *Young Astonisher*, and *King of the West*, all produced stock almost without exception of the same colour and marking, and because of their hardiness and courage were much sought after. The last of these stallions, *King of the West*, died about ten years ago, and there are still stock by him in the neighbourhood.

Except for the dun family, 75 per cent. of the remaining Pack mares in this neighbourhood are black or very dark mottled brown with tan muzzles; the remainder are bays, and these dark coloured mares are all of the same family.

The type of horse most difficult in these days to find for army purposes is the horse artillery wheeler, one that can trot, gallop, carry a heavy weight (driver and harness), is hardy, and can stay.

In the Pack horse we have this type exactly, and having a pedigree of 135 years, he will breed to type.

The present best artillery horses are probably chance bred ones, or those containing Pack blood far back, but I am convinced, with what I know and have seen of the remaining specimens of the breed, that it is as certain as anything can be in horse-breeding, that if this old breed were revived the difficulty of horsing our artillery would disappear.

In support of this statement I have in my possession the measurements of the twenty-four best artillery wheelers in Aldershot, and the measurements of the best of these specimens when compared with those of Pack mares now in this district are very similar.

The pack horse has also the much desired military attributes of hardiness, their ability to withstand exposure, and to maintain their condition on indifferent "keep," which is more than

can be said of some of our more modern breeds and nondescript mixtures.

Many of the old stallions and still living mares could trot their mile in three minutes. One stallion, *Cottager I.*, besides winning all his trotting matches also won steeplechases; many were celebrated hunters, amongst these one *Tempest* belonged to the late Mr. Tucker about 1852, and on him he used the whip in the hounds of the late Crocker Bulteel, Esq., M.P., of Lynham and Fleet. These hounds are now known as the Dartmoor. Another celebrated stallion, named *Passby*, for many seasons carried the huntsman of the late Sir Henry Seale's foxhounds, now the South Devon, in the country round Totnes. Both these stallions covered mares in summer and hunted in winter. The Kingsbridge to Plymouth coach, driven by the late Mr. J. Tucker, was horsed entirely with Pack horses.

The late Mr. J. Mosey Toms, of Luson, in the parish, who died in 1896, used to relate that when as a lad he worked on his father's farm (about 1835) there was not such a thing as a two-wheel conveyance on the farm. There were ten Pack horses kept which carried the corn from market or mills, carried manure on to the land, and were used for all general farm work, also for riding and hunting.

When carrying corn, three long narrow bags were placed across a pad on each horse and secured by straps, each bag when filled weighed 220 lb., the horses were good walkers, and could walk their five miles an hour under these loads. One man would take charge of a string of six horses, which between them would carry a total load of about two tons. The man would ride and change from one horse to another, and it would appear that each horse in turn would carry about 780 lb. Would it not be difficult in these days to find horses capable of walking fast under such a burden, or walking at all, and also capable of carrying a huntsman to foxhounds and trotting a mile in three minutes? Such were the Devon Pack horses of the last century, and is it not worth while to make an effort to rescue the breed? For which purpose I believe there to be still sufficient material.

The Pack horse, as already stated, is a very fast trotter, but the action is "out" and not "up." Mr. Mosey Toms and other old farmers talked of the more modern Hackney introduced into this district as "Naildrivers," to distinguish them from roadsters of the Pack breed.

I will endeavour to show later in this paper that the remaining fifty Pack horses in this neighbourhood are much of the old blood going back 135 years. Between 1840 and 1850 two Norfolk roadsters of the same class were imported into

the district. These were *Phenomenon* and *Joseph Andrews*, and their blood is in all the remaining Pack mares.

Curious to relate, there is still in the eastern counties a stud of Roadster Pack horses, which are used for hunting, driving, and farm work. This stud has been in one family since 1775, and are of the same blood as *Phenomenon* and *Joseph Andrews*, who came from the East to the West, and here we have for breeding purposes a valuable link, should an effort be made to revive the breed.

In these days the breeds of horses have been specialised to perform, so to speak, one office only—the thoroughbred to race under a featherweight, the Hunter (a cross-bred) to gallop under a medium weight, the Hackney to step high in light harness, the Shire and Clyde for heavy draught work at a walk, and the Suffolk for rather faster heavy draught work, and so on. Consequently I have been met with the argument that should we revive the Pack horse there would be no demand for him; the dealers do not require an “all round horse” of this type. This may be true, but the army and farmers require them, and Foreign Governments require stallions of this breed for their State studs, and would be ready buyers.

ORIGIN.

In old works on the horse, the oldest English breed is spoken of as the “English Great Horse” or “English Black Horse.” In this, I believe, we have the foundation stock of the Devon Pack horse.

Carts and wheels were little used up to the end of the eighteenth century, owing to the badness and absence of road, and up to that time we read “the Pack horse was the chief means of burden bearing, either for the conveyance of goods to market, or of conveying men from place to place. As to conveyance of goods, we find that as late as 1789 few carts were in use, no waggons, and the bulk of the transit in many districts was by means of the Pack horse. In the colliery districts coal was carried by horses from the mines; even manure was carried on to the land in some places on the backs of horses. Trusses of hay were also occasionally met with loaded up on horses’ backs, and in towns builders’ horses might be seen bending under a heavy load of brick, stone, and lime. Members of Parliament travelled to London on horseback . . .”—Vide *Live Stock Journal*.

After 1800 roads began to multiply and improve, and wheel traffic to come into general use. This led to the development of two breeds from the original Pack horse stock: a heavier breed for slow wheel traffic—the heavy cart horse—a

faster breed for light fast traffic, the modern Cleveland Bay (the Norfolk and Yorkshire roadster), which later developed into the Hackney. It would appear, therefore, that up to 1800 the Pack horse was universal in England, Ireland, and Scotland, and would probably linger on longest in out-of-the-way parts of these islands where roads were the worst, and the necessity of carrying merchandise and men on the old-fashioned strong and active Pack horse still continued.

In the colliery and manufacturing districts in the north and centre of England, and in the neighbourhood of large towns, railways quickly came to drive out the Pack horse, and it was only in Devon and Cornwall and certain parts of Ireland that his services and general usefulness were still required and recognised. These districts embrace much rough moorland country studded with bogs and boulders, very hilly, splendidly watered by innumerable streams, suitable for mills, but which to this day can only be crossed on foot and on horseback—Dartmoor and Exmoor. These districts are rich in tin and other mineral mines, and china clay, peat and surface workings, and the moorland streams are used to work innumerable flour and cloth mills. In such districts the old Pack horse has lingered on up to the present day, or at least up till 1901, when the last two old-fashioned pure-bred Devon Pack horse stallions were sold out of the country, viz., Mrs. Giles' *Triumph II.* and *Sportsman*.

Up to about 1850 there appear to have been many Pack horse stallions serving in both North and South Devon, and all these appear to have been of an old Devon breed not intermingled with the similar blood of the old-fashioned Norfolk roadster.

After 1850 the number of stallions began to diminish, and many of those that continued became crossed with much nondescript blood.

THE GILES FAMILY.

We are indebted to a yeoman family of Giles for the remaining examples of the Pack horse still to be found in the purest form, and these specimens now living vary from ten to twenty-five years old, and with them the breed will become extinct. If, therefore, anything is to be done, it must be done at once.

The last of the family of Giles died in 1901, and his stallions were then disposed of. One only now remains alive; he is now on an Australian ranch, where also are thirty brood mares by him, and he is now fourteen years old; and I now hold the offer of repurchasing him and his daughters and bringing him back to this country.

The Giles family kept their stud of Pack horses from generation to generation. I can trace them and their horses back to 1776, and am told that they and their horses were then long established in the county.

It appears that from 1840 to 1850 two Norfolk roadsters were introduced into South Devon, in the district travelled by Giles' stallions.

One of these was called *Phenomenon* (Dorsley). This horse is No. 1048, Vol. 2, page 61, in the Hackney Stud Book, and traces back to the *Original Norfolk Cob*, and further back to *Markse*, the sire of *Eclipse* and the *Godolphin Arabian*.

There is a print and description of this horse in the *Sporting Magazine*, April, 1856, page 236. This horse stood at Totnes from 1850 to 1864, but did not travel.

COLOUR.

One of the characteristics of the Giles breed of Devon Pack horse is the colour, which is mottled black or very dark mottled brown, with tan muzzles. All the stallions of which I have any record, dating back to 1800, are described as black or dark brown. In the stock now to be found in this neighbourhood, this black or dark brown colour (Old English Black horse) still predominates to the extent of 75 per cent. in the remaining Pack mares, and their foals, by thoroughbred Hackney and cart stallions. On all the stud cards of their stallions back to 1800, the Giles family boast "that the blood of these horses is in the King's stables."

OLD PRINTS.

The following prints in the Hackney Stud Book resemble greatly in type the best of the Devon Pack horses (to whom they are related through *Phenomenon* and *Joseph Andrews*):—

Marshland Shales (1820). Frontispiece, Vol. 1.

Norfolk Phenomenon (Bonds). Page 117, Vol. 1.

Norfolk Hackney (493). Page 17, Vol. 2.

Robert Bakewell's Cob of 1875. See frontispiece, R.A.S.E. Journal, 1894.

THE TYPICAL PACK HORSE

Is a short-legged, very muscular, weighty, active little horse—"a big little 'un." He is "long, low, and lusty," and a very fast trotter, a very good ride, can jump and climb, and can work on a farm; he seldom if ever exceeds 15.3—generally less—but is very hardy, very sound, and full of spirit and courage, and is not to be tired out; can maintain condition on

the worst of keep—a typical wheel-horse in a horse artillery team ; the smaller ones mounted infantry cobs up to 16 stone.

His colour is generally black, or dark brown, with lighter muzzle, with little white markings ; he should have no hair on shanks or fetlocks, broad back, and loins broad and arched ; big girth, large arms and gaskins, very short canons, broad quarters, feet of good horn but not large ; sloping riding shoulders, and sloping croup, and neck long and arched. He has a small and lean head. In the best specimens the head resembles that of the Arab and the thoroughbred, with the same bright bold eye. Even in the less breedy specimens the head is generally small and lean, though sometimes ugly. Another feature of the breed is the full development of the back tendons, which stand well out, and well back from the canon bones. This gives big measurement below knee.

LONGEVITY AND SOUNDNESS.

During the passing year, 1910, I have inspected about 100 Pack mares and geldings between ten and twenty-five years of age, and I believe all to be practically sound, and all are still at work. Their canon bones are clean and their hocks free from curb or spavin. A brown gelding about thirty years old, now working in a miller's cart, was out hunting last week. This cob some years ago was matched to trot in a gig three miles along the turnpike road in ten minutes. He did it. A brown mare working on a farm, twenty-nine years old, bred foals in 1907 and 1908. A brown mare, twenty-seven years old, working in a butcher's cart, has bred foals for the last two years and is now in-foal. A black mare twenty-four years old bred a foal last year. A black mare seventeen years old has bred foals in the last four seasons and is now in-foal.

A black mare eleven years old, on a hot day in June, 1909, in-foal and lying out in the fields, was put into a trap, and four farmers got in it. She trotted twenty-six miles over hills and Dartmoor without a whip to Huckaby Races on Dartmoor and back—fifty-two miles. She often trots to Plymouth—thirteen miles—in an hour. This mare was out hunting last Saturday. A black mare, 13.3½, ten years old, lies out, works on the farm, and goes in a gig. Once a week she goes hunting by way of a holiday, carrying her master—16 stone—over this hilly rough country, rather better than our old hunters carry us. A black gelding thirty-five years old worked on a farm and pulled a gig up till last harvest, when the owner pensioned him off for the rest of his days. I inspected this gelding a few days ago, and he still trots with fine action and gallops freely, is fat, and his limbs and joints are absolutely fine and clean.

The breed is reported to be absolutely free from spavin.

SOME PARTICULARS OF THE LAST EIGHT STALLIONS WHICH
DESCENDED IN DIRECT TAIL MALE.

Sportsman A. Foaled about 1800, sold to Hanover, and whose stock are said to be still represented in the King's stud, London.

Cottager A. Son of the above, foaled about 1822, was a noted trotter and steeplechaser in his day, and after winning all the trotting matches in Devon was sold abroad for 300 guineas.

Triumph A. Son of the above, foaled about 1836, was sold to Hanover for 800 guineas.

Cottager 1st. Son of the above, foaled about 1849. A noted trotter and show horse

Cottager 2nd. Son of the above, foaled 1861. Took all prizes at shows for best roadster stallion.

Triumph 1st. Son of above, foaled 1879. Sold to America for 500 guineas.

Triumph 2nd. Son of above, foaled 1882. Sold to the late Vere Shaw, Esq. Exhibited in London, 1897. Lately died in St. Albans.

Sportsman (Young). Son of above, foaled 1896. Sold and now alive in Australia.

THE WHEREABOUTS OF DEVON PACK HORSES.

The home of the Pack during the past century was in West Devon, that is, the country between the Dart and the Tamar. This country is cut into North and South Devon by Dartmoor, and in both north and south of the moor the Pack horse was plentiful up to twenty-five years ago. Living as I do in South Devon, this article concerns more especially the breed south of the moor, where in the district known as the South Hams, thanks to the Giles family, it continued up to 1900. In North Devon the breed has been more neglected than here, and although formerly there was a certain amount of interchange of blood between the two districts, yet the moor was such a formidable barrier that each district seemed to have had separate studs of stallions. I have before me a list of stallions that formerly were well known in North Devon, but of these only two occur that I have met with in the pedigrees of South Devon stallions and mares. I reside in the centre of the district travelled by the late Mr. Giles—the South Hams—and I have inspected in the last year fifty Pack mares by Giles' Pack stallions, and fifty young stock by thoroughbred Hackneys and cart stallions out of these mares. These pure mares vary from ten to twenty years old, and are of various heights, from 14.1 to 15.3. It is daily becoming more difficult to trace these mares; they

mostly belong to old farmers, and when these die, their stock is sold up, and the old mare sold to some one who never inquires into her history or pedigree.

STALLIONS.

There is only one pure Devon Pack stallion now living; he is in Australia, fourteen years old. He must be the sire of two, and a half brother to all the other pure-bred mares above mentioned.

AN EASTERN COUNTY BREED OF PACK HORSE.

There is in the east of England at this moment a stud of Pack horses similar and closely related to these of South Devon. This stud has been in a certain family since 1775, they trace back through *Performer* and *Fireaway*, *Marshland Shales*, to the original *Shales* by *Blaze* by *Flying Childers*, by the *Darley Arabian* to the Arab blood. This stud has a somewhat similar history to that of the late Giles stud. It was started about the same date, 1775, from the then Norfolk Pack roadsters, "*Shales* family," but with the advent of railways did not follow the fashion for breeding roadsters for harness only, but, as "Devon Horses," were bred for ride and drive, or as a general utility type. Being closely related and very similar in shape to our Devon horses, they would, I am convinced, prove a most fortunate nick in breeding back to the same family and type. There are at present four stallions or more and a dozen mares. The present owner of this stud uses these horses (mares and geldings) as hunters—the nearest meet is fifteen miles off: they never come home tired—also for harness work of all kinds.

PACK HORSE THE FOUNDATION STOCK FOR HEAVY-WEIGHT HUNTERS, CAVALRY AND ARTILLERY HORSES, AND MOUNTED INFANTRY COBS.

Ireland for the last fifty years has been able to produce better horses than England, because she possessed in greater numbers the general utility light cart or Irish Pack horse. This old Irish breed has not been kept up by the use of Pack stallions, and consequently the strain has now almost been bred out by other breeds. Thoroughbred sires have no doubt improved the riding qualities, but so reduced the weight and stamina of the mares that heavy-weight hunters are now difficult to find: also all the best mares are bought up by foreigners, and now Anglo-Norman stallions are being introduced into Ireland, which from all I hear appear to be an inferior modern manufactured Pack horse with a short pedigree.

THE VALUE OF THE PACK HORSE TO THE HORSE
ARTILLERY AND OTHER MOUNTED BRANCHES.

I have before me the measurement and weights of the twenty-four best horse artillery wheelers now serving in the Aldershot Division, which are reported by their officers to be fairly efficient at their work. But it is obvious to any horseman on examining these figures that these horses are of no family type, but are, so to speak, "the best nondescripts that can be found at the remount price." They vary greatly in height, girth, weight, withers to brisket, brisket to ground. Now I contend that were Pack horses to be bred for the army, there would be no lack of R.H.A. remounts of an established type, with the ever necessary attributes of pluck, stamina, and pace. Sixty-five per cent. of the remounts required for the army are for the Artillery and Transport service. The better class Packs could horse the artillery, and the slower ones the transport services. The remaining 35 per cent. of army horses are required for cavalry and mounted infantry. These should be of the heavy-weight hunter stamp, which are more easily bred from Pack stallions mated to hunter mares than from nondescript mares and thoroughbred sires.

HOW TO RESTORE THE BREED.

I think I have now written enough to show that there is still sufficient material left in England and Australia to restore the breed, IF it can be done at once, and the necessary arrangements made to make use of the coming breeding season, 1911. And should a vote of money be forthcoming from the Development Commissioners appointed by the Board of Agriculture and Fisheries, I would suggest that a stud book be started, that the stallion *Sportsman*, now in Australia, together with his best and most typical entire sons, also his best and typical daughters, be purchased and brought back from Australia. I would also recommend purchasing the most typical young stallion of the stud in East Anglia, and also the best of the mares of that stud. All these purchased mares should be placed together on a stud farm, and be covered by the one of the three stallions most suited to her. Also the best R.H.A. wheeler mares cast for age or accident (not unsoundness) be sent to this farm. The object of this farm would be to breed stallions to distribute about the country at a later date. I consider that for this object a stud farm is absolutely necessary, so that the young stock would have all the care and attention possible to assure their chance of growing and developing to the fullest extent. Were we to trust to individual farmers and breeders this very necessary attention could not be enforced or expected. In addition to the stud farm stallions,

another Australian or East Anglian stallion should be purchased and be placed in this district to be used on the remaining pack mares that have not been purchased, without fee, and prizes or premiums should be offered at the local agricultural shows for their produce.

If such a scheme be at once carried out, the Pack horse can be revived and the expense entailed would be but small as compared to the value of the breed to the nation generally and the army in particular.

C R STAVELEY,
Lieut-Colonel.

Pamflete,
Holbeton, South Devon

STATE AID TO AGRICULTURE IN CANADA.

IN 1885 the late Dr. Fream contributed to the *Journal* (Vol. 46, pp. 217, 377) two exhaustive articles on Canadian agriculture. The present paper of more limited scope will attempt to describe in outline the nature of the direct aid now given to agriculture by the State in Canada, including that which is of national character, as rendered by the Dominion Government, and also the more local, yet hardly less important encouragement which each of the provinces affords within its own area.

THE DOMINION GOVERNMENT.

Like its prototype—the English Board of Agriculture and Fisheries—the Dominion Department of Agriculture at Ottawa consists of different Branches, some of which have no direct connection with agriculture but come for convenience under the same administration. Another similarity is that the Canadian Department has also outgrown its original office accommodation. Its Branches are situated in different parts of the capital, though the inconvenience thus caused is partially obviated by the city's admirable system of telephonic communication.¹

The Department, as established at Confederation in 1867, succeeded the provincial Bureau of Agriculture and Statistics, which was originally created at Quebec in 1852. It now consists of thirteen Branches under the Minister of Agriculture, an office which for the last fourteen years has been held by the Hon. Sydney Fisher, who is well known to British agriculturists. The Deputy-Minister (Mr. George F. O'Halloran)

¹ New buildings for the accommodation of the various Government Departments, now scattered over the city of Ottawa, are in course of erection. They will be 600 feet long by 200 feet wide, with six storeys on one side and five on the other.

controls the executive administration from headquarters—his office corresponding with that of the permanent secretary of an English government department—and the thirteen Branches are :

- | | |
|----------------------------|-------------------------|
| 1. Experimental Farms. | 8. Publications. |
| 2. Live Stock. | 9. Patents. |
| 3. Health of Animals. | 10. Copyright and Trade |
| 4. Dairy and Cold Storage. | Marks. |
| 5. Seed. | 11. Archives. |
| 6. Tobacco. | 12. Public Health and |
| 7. Census and Statistics. | Quarantine. |
| 13. Exhibitions. | |

Of these only the first six have a direct bearing upon practical agriculture ; three (Nos. 7, 8, and 13) include agriculture but embrace other subjects as well ; the remainder are entirely non-agricultural. At present the total permanent staff numbers about 570 persons, of whom 270 are stationed at Ottawa, and 300 at various other points in the Dominion and abroad.

Experimental Farms.—As established under the Experimental Farms Stations Act, 1886, these consisted of the Central Farm at Ottawa for Ontario and Quebec and of four Branch Farms for (1) the Maritime Provinces ; (2) Manitoba ; (3) the North-West Territories ; and (4) British Columbia. The Central Farm, situated within three miles of Ottawa, is easily accessible by electric tramway, and no travellers passing through the capital fail to visit it. All are impressed by the beauty of the situation and by the tasteful skill with which the grounds have been planted. After twenty-five years' growth the trees, flowers, and shrubs, botanically classified and named, are not only available for scientific studies but appeal irresistibly to lovers of natural beauty. The arboretum of 65 acres includes one of the finest collections of conifers in the world. A forest belt of 21 acres, planted around two sides, serves as a windbreak and for the study of forestry in relation to the farm. The buildings comprise five houses for resident officers, foremen's and labourers' cottages, the general offices with entomological and botanical laboratories, a complete chemical laboratory, stabling for twenty-five horses, barns, cow-houses lately reconstructed upon modern lines and accommodating 160 cows, besides the bull boxes and calf pens, a dairy, implement sheds, sheep cotes, new piggeries, poultry houses, and apiaries.

Under Dr. William Saunders, C.M.G., whose long and valuable services as Director of the Central and Branch Farms received special recognition from English agriculturists by his election in 1908 as an Honorary Member of this Society, the

practical and scientific work of the Central Farm is organised in seven divisions comprising (1) agriculture; (2) horticulture; (3) plant breeding and selection; (4) chemical analyses and research; (5) agricultural entomology; (6) agricultural botany, and (7) poultry. These divisions show how comprehensive is the nature of the practical and scientific work undertaken for the benefit of Canadian farmers.

Only a very few of the results of the numerous experiments conducted during the past twenty years can be mentioned. Early sowing, for instance, is now a cardinal point of Canadian practice. That this is so is due mainly to the conclusive evidence derived from experiments which have shown how under the conditions of a short season, combined with extraordinary rapidity of growth, even the briefest delays may materially affect the crop results. Then again the Branch Farms of the west have proved the value of summer fallowing, a practice which through conservation of moisture in the ground and destruction of weeds enables the crops to resist drought and results in better yields.¹

Good work is being accomplished by the annual free distribution of samples of well cleaned seed of improved varieties of grain and of seed potatoes. As each sample weighs from 3 to 5 lb., according to variety, a careful farmer soon obtains sufficient seed for his own purposes with a surplus for sale. The average annual distribution since 1887 has numbered 38,000 samples, and last year (1909-10) the total number reached 45,051.

Apart from the general experimental plots, about 200 acres of the Central Farm have been reserved since 1899 for cultivation as a practical farm under a five-year rotation. In the horticultural division about 40 acres are devoted to experiments with fruits, chiefly apples, but including also outdoor grapes and a great variety of small fruits and vegetables, while flowers, including roses, are not neglected.

Interesting and important work is being carried out by the cerealist, especially in regard to wheat varieties, for which the chief desiderata are early ripening, freedom from rust, and good baking qualities. A miniature experimental flour mill, with electric baking outfit, renders possible the milling of small quantities of grain and the consequent early rejection of unsuitable varieties.

The work of the Chemical Division is practically identical with that of Dr. Voelcker for this Society, the difference, however, being that the Dominion Chemist and his four assistants

¹ Summer fallowing in Canada consists in ploughing, harrowing, and otherwise tilling the land throughout the summer, and leaving it unseeded until the autumn or succeeding spring.

—all University graduates—are remunerated by the State and that no fees are payable by Canadian farmers for their services. In addition to the work of analysing samples of food stuffs, soils, fertilisers, insecticides, dairy products, &c., to the number annually of between 700 and 800, Mr. Frank T. Shutt, Chemist since the establishment of the farms, has conducted original researches with regard to Canadian soils, the influence of environment upon the nature and composition of wheat, and the factors that determine strength and quality in wheat and flour, as well as other investigations bearing upon practical agriculture.

A handsome drinking fountain at the farm commemorates the labours of the late Dr. James Fletcher, who ably filled the position of Entomologist and Botanist from 1884 to his death in 1908. Two new divisions of Entomology and Botany have since been formed, under the charge respectively of Dr. Gordon Hewitt, of the Manchester University, and Mr. H. T. Güssow, formerly assistant to Dr. Carruthers. Both officers have before them wide fields of useful investigation in Canada.

So marked have been the benefits of these farms that the policy of their gradual extension has been adopted within the last three years, and five new farms have already been added to those originally established. The following statement shows the size and location of each of the existing farms with the date when established :—

Farm	Province	Acreage	Date established
Central Farm, Ottawa	Ontario and Quebec	467	1886
Branch Farms			
Charlottetown	Prince Edward Island	60	1910
Nappan	Nova Scotia and New Brunswick	300	1886
Brandon	Manitoba	625	1886
Indian Head	Saskatchewan	680	1886
Rosthern	Saskatchewan	152	1909
Scott	Saskatchewan	200	1909
Lethbridge	S. Alberta	400	1908
Lacombe	N. Alberta	150	1908
Agassiz	British Columbia	300	1886

In addition there are two small stations at Kamloops, British Columbia (10 acres), and Fort Vermilion on the Peace River, 700 miles by mail route north of Edmonton in Alberta (5 acres). The whole area therefore at present under experiment is just under 3,350 acres; but negotiations are in progress for the early establishment of new farms for Nova Scotia and Quebec in the east and Vancouver Island in the west; while in the coming season experiments will begin in the far north at Forts

Smith and Resolution on the Great Slave River and Fort Providence on the Great Slave Lake beyond the 60th parallel of latitude.

At each of the Branch Farms a superintendent is in charge, but all are under the general control of the director at the Central Farm. The experiments at the Branch Farms have special relation to local conditions. Though each covers a wide field, fruit cultivation receives special attention in Nova Scotia and British Columbia; while the prairie farms study cereal production, especially wheat, and conduct experiments in the winter feeding of live stock. At Lethbridge, in the dry belt of southern Alberta, the farm is divided into two portions, one devoted to dry farming and the other to the growth of crops by artificial irrigation.

Live Stock.—Two Branches of the Department of Agriculture are specially concerned with farm live stock, one with encouragement of the production of pure-bred animals and the other with the control of contagious diseases. Both are under the chief direction of the same officer (Dr. J. G. Rutherford, C.M.G.), who is known in the one capacity as Live Stock Commissioner and in the other as Veterinary Director-General. The Live Stock Branch co-operates with the provincial Departments and with the organisers of shows or fairs by providing the best available judges at a cost not greater than would be incurred if local judges were employed. This plan ensures strict impartiality and the best results from an educational point of view in the correct placing of the exhibits, while the great distances in Canada render such aid by the central Government of considerable value. Direct financial assistance is also extended to winter fairs and provincial auction sales of pure-bred stock on condition that the entries are not limited to the province in which they are held. Lectures on practical agricultural subjects are a regular feature of these exhibitions, and the organisation of a corps of qualified speakers is another of the duties undertaken by the Branch.

As in England, live stock pedigree registers have long existed in Canada, but their multiplication, before Confederation abolished the old geographical boundaries, had, with other causes, introduced intolerable confusion. This has now been remedied under the provisions of the Live Stock Pedigree Act, 1900, by which the records have become both unified and nationalised. Under the plan adopted the various breed societies, while each continues responsible for the local management of its own affairs, are represented upon a National Record Board for the issue of pedigree certificates. The Dominion Department of Agriculture provides offices in

Ottawa for the National Record staff, together with stationery and franking privileges, and all pedigree certificates are, before issue, examined and, if correct, certified by an officer of the Live Stock Branch on behalf of the Minister of Agriculture: so that in effect every pedigree certificate has behind it a government guarantee of accuracy—a matter of no small advantage, especially in connection with international trade. The Department makes also an annual grant, lately increased to over 1,500%, towards expenses, chiefly those incurred in the organisation of new associations. All the Canadian breed societies have joined in the scheme with the single exception of the Holstein-Friesian Society of Canada, which remains independent and self-supporting.

Efforts are now being made by the Branch to place the old breed of French-Canadian horses upon a firmer basis, and animals are being inspected for entry in a new Stud Book of the breed.

Another duty undertaken has reference to pure-bred dairy cows. Inspectors test the milk production with a view to the entry of qualified animals in what is termed the "Record of Performance." Two reports with the records of cows since 1908 have been published, and there is a good demand for the cows as dams.

Although in Canada there are large areas suited to the rearing and feeding of sheep this industry has been somewhat neglected, and the numbers of sheep have steadily declined during the past ten years. The Branch recently issued a well-prepared Bulletin on Sheep Breeding for free circulation, and other efforts have taken the direction of a distribution of pure-bred rams by means of auction sales conducted by officers of the Branch in different provinces. The expenses of the sales, including transportation of the animals, were borne by the Department; the breeders simply contributed the stock and received the full selling price. Sales in Nova Scotia, Prince Edward Island, Ontario, Quebec, and British Columbia have placed 400 pure-bred sheep within the reach of farmers desirous of improving their stock. Other special inquiries as to the promotion of sheep breeding are now in progress.

In the summer of 1909 a Commission visited Great Britain, Ireland, and Denmark to inquire into the breeding of pigs and the preparation of pork products for the market. Valuable information was obtained and is now being circulated freely by illustrated bulletin.

A sum of \$50,000 (10,274*l.*)¹ is granted annually through the Department of Agriculture towards the expenses of a provincial

¹ Throughout this article, excepting for quite small sums, dollars have been converted into £ sterling at the usual exchange rate (\$4.86½ = 1*l.*)

exhibition, which then becomes the National Agricultural Show of the Dominion for the year. Last year (1910) this show was held at St. John, in New Brunswick; this year (1911) it is to be held at a town in Saskatchewan. The grant is given conditionally upon its being applied in special prizes, in equalising the freight rates for exhibitors, in advertising the exhibition outside the borders of the province, in securing and maintaining exhibits of an educational character, and in defraying the increased cost of management.

Not less important is the work of the Health of Animals Branch which, under the Veterinary Director-General, is responsible for the health of farm live stock. A measure of this responsibility as regards the horses, cattle, sheep, and pigs of the Dominion is their total value, which on December 31, 1910, was officially estimated at 122,007,000/. In her dry and sunny climate Canada possesses a great asset for the maintenance of live stock under healthful conditions. The more malignant diseases of animals such as cattle plague, pleuro-pneumonia, and foot-and-mouth disease, which prevail elsewhere, are happily unknown. At the same time unceasing vigilance is exercised to prevent their introduction from other countries. Owing to the long international boundary between Canada and the United States the inspection of imported live stock is a difficult undertaking. It is being efficiently carried out. There are twenty-nine quarantine stations and forty-four inspection ports along the international boundary, and under no circumstances may animals be admitted at other points. Animals from over-sea countries may only be landed at certain specified ports, at each of which veterinary inspectors are stationed with facilities for the detention of stock until demonstrated to be free from disease, while the presentation of certificates from countries of origin and other precautions are rigidly enforced. Outbreaks of sheep scab and swine fever (or hog cholera) are now only of sporadic occurrence, and the fact that these diseases have been brought under effective control within the past few years is sufficiently suggestive of the excellence of the measures adopted.

In regard to glanders the Dominion has been the first to apply the principle of slaughter with compensation for animals reacting to the mallein test. Since 1904, when this policy was first adopted, the disease has been gradually conquered and has now been virtually extirpated from eastern Canada, while in the west, where "range" conditions prevail, very satisfactory progress has been made. This result has been accomplished at a total cost for compensation and expenses of something like 250,000/., representing less than one-half per

cent. on the total estimated value of farm horses alone, viz. : 60,287,400*l*.

In matters of veterinary pathology the Branch carries out the same kind of work that is undertaken for the governors and members of the Royal Agricultural Society by the Royal Veterinary College. A local experiment station for the scientific investigation of special animal diseases is maintained at Lethbridge in southern Alberta ; but the principal work of this kind is carried on at a well-equipped biological laboratory at Ottawa. Here diseased tissues are received from all parts of Canada, and the diseases, when sufficiently studied, form the subject of reports and bulletins. A work of especial value to agriculturists is the distribution of anthrax and black-leg vaccines, consisting of attenuated cultures of the germs causing these diseases, which have been proved to afford genuine protection or immunity against subsequent infection. The vaccines are supplied in the form of silk threads impregnated with the virus ; they are passed by a needle into a fold of the animal's skin, the needle being withdrawn, but the thread left behind. The vaccine outfits are sold at 2*s*. each, and each dose costs five cents, or 2½*d*. In 1909-10 the number of vaccine doses supplied for black-leg was 13,469 and for anthrax 386. Mallein and tuberculin for the diagnosis of glanders and tuberculosis are also prepared in the laboratory, the number of samples sent out in 1909-10 being 32,996 of the former and 6,600 of the latter.

The administration of the Meat and Canned Foods Act, 1907, which provides for the inspection of meat and canned foods intended for export, is entrusted to this Branch, and entails the appointment and supervision of a large number of specially trained inspectors. The Act has an important bearing upon the live stock industry inasmuch as it ensures the absolute wholesomeness of the canned meat products of animals which are bred and fed in Canada.

Dairying and Fruit.—Annually increasing in importance the dairying and fruit industries have been and are the object of special solicitude on the part of the Dominion Government. The Dairy and Cold Storage Branch is organised in the four divisions of (1) Dairying ; (2) Extension of Markets ; (3) Fruit ; and (4) Cold Storage, under a Commissioner (Mr. J. A. Ruddick), with a staff numbering seventy-five, of whom about forty are dairying, fruit, or cargo inspectors. An Assistant Commissioner is employed chiefly as lecturer amongst the French-speaking populations of Quebec and Ontario.

Practical dairying experiments are undertaken as required, but probably the most important present work of this Division relates to the cow-testing movement. This had its origin about six years ago, when a special cow census taken by the Branch

in three Quebec counties showed that large numbers of cows were being kept at a loss, and that the average yield per cow was less than one-half of what it was in Denmark. The Division commenced therefore the organisation of cow-testing associations, and though the initial work has been of an uphill nature the progress has been most encouraging and is leading to almost a revolution in the methods of Canadian milk production. Each member of an association supplies his own outfit, consisting of a scale and a bottle for a sample of several milkings. The samples from each cow are collected monthly and tested for butter fat at the expense of the Department, which also supplies the necessary chemicals and the blank forms of record. The results are reported monthly to the Branch for tabulation in permanent form, and copies are forwarded to each member with totals to date of milk and fat for each cow. Blank milk record forms are supplied free for the use of individual farmers, many of whom are taking up the work independently of the associations. Forms for recording food rations are also distributed so that dairymen may ascertain which cows give the best returns for the food consumed and which food is the most profitable. Strong recommendations are that the records should be made for each cow during the full period of lactation and for the complete year in respect of the herd; also that the milk should be weighed daily with a view to the immediate rectification of defects causing diminution of yield. Numerous instances are on record to prove that by judicious attention to details, by the weeding out of unprofitable animals, and by the use of better bulls, the milk yield may be improved in weight between 20 and 30 per cent. The number of these associations in operation throughout the Maritime provinces, Ontario, Quebec, and British Columbia, is now about 160, representing 11,000 cows.

The Extension of Markets Division supervises the Canadian export trade in dairying and fruit products with a view to the maintenance of the national reputation for excellence in quality and honesty of handling, to the opening up of fresh markets, especially by experimental shipments, and to the observance of due care and promptness of despatch and delivery by the transportation companies. Cargo inspectors stationed at the Canadian and British ports maintain close touch with the Branch at Ottawa and report grievances with a view to their immediate redress. Great have been the improvements effected during the past ten years. Prior to that period perishable products such as butter and fruit lay exposed to heat and other harmful conditions on the Montreal platforms or wharves, and similar delays in unpacking and in deliveries took place at the English ports. Railway delays in Canada were frequent, and

fifteen years ago cheese, over-heated in transit and otherwise damaged, would on arrival be worth many shillings per cwt. less than when shipped.

Since 1900 thermographs for the automatic registration of temperature have proved of great assistance in connection with the carriage of produce, and the Canadian Government is now the largest user of these instruments. They cost, for 14-day records, about 6*l.* 12*s.* each, including ink and charts. Carried in locked wooden boxes, perforated to admit the air, they are stowed with the cargoes, in the refrigerator chambers, and in the ordinary holds of ships. The records indicate daily every variation of temperature and are afterwards furnished to the refrigerating engineers, who are thus enabled to discover unusual fluctuations and prevent their recurrence. Thermographs are used also on the Canadian railways, and, if firmly braced, good records may be obtained in the ordinary freight trains, though the conditions are not very favourable owing to jolting and vibration. In some cases responsibility for railway delays has been fixed by their use, for when a train is motionless the line traced is firm and distinct whereas in motion it is more or less blurred.

Canadian laws are strict in their repression of practices affecting the reputation of the export trade, and Parts VIII. and IX. of the Inspection and Sale Act relating to dairy products and fruit are enforced through this Branch. All creameries and cheese factories are registered, cheese and butter for export must be branded as "Canadian," skim-milk cheese must be so marked, and no fat other than that natural to milk may be used in cheese-making. The manufacture, importation, and sale of margarine or other butter substitutes is absolutely prohibited throughout Canada.

Enforcement of the provisions of Part IX. of the Act, which relate to the grading and marking of fruit, especially apples, is one of the duties of the Fruit Division, and fines are imposed for improper grading and marking. In seasons of large production many dealers are detected in trying to pass low-grade fruit as "No. 1." In the year 1909-10 the Division secured 216 convictions, and the fines aggregated 612*l.* These fines exercise a salutary influence, as does also even more the practice adopted by the Department of publishing the names and addresses of offenders. From May to September the Division issues a Monthly Crop Report on the progress and prospects of the fruit-growing industry, based on replies received from some 3,000 correspondents. The inspectors, when not otherwise employed, visit the orchards and impart practical instruction in the best methods of cultivation and spraying and in the packing and marking of fruit.

Government intervention for the granting of facilities for cold storage is of quite recent origin; it is justified on the ground that such facilities benefit both producers and consumers, the former by preventing forced sales during periods of glut and the latter by equalising prices and preventing exorbitant and prohibitive charges. Under the Cold Storage Act of 1907 subsidies, not exceeding 30 per cent of the total cost of building and equipping public cold storage warehouses, are paid by the Government under contracts, of which six have already been made. The Department exercises control over the temperatures maintained and regulates the rates and tolls chargeable for storage.

Since 1897 bonuses of 20% each have been offered to owners of creameries for the installation therein of cold storage plants. Up to the present 398 creameries have complied with the conditions required and 285 have done so partially, receiving therefore a proportion of the bonus offered. A total of 11,851% has been expended in this way.

Another direction in which the Government aids dairy producers is by the provision of weekly iced car services on the routes to Montreal and Quebec. The Department guarantees two-thirds of the earnings of a full car-load in addition to the cost of icing the car, which is about 16s. for butter and 20s. for cheese. Without this arrangement small producers would either have to pay the full car-load rate on a small quantity or hold their produce until they had got a car-load. The amount paid under this head in 1909 was 2,698%. A similar arrangement is applied to the steamships by the reservation of a small chamber in vessels sailing on specified dates. All steamships now provide cold storage facilities; but prior to 1903 the Department shared the expense under agreements sanctioned by legislation.

Plans for dairy buildings and refrigerating plants are supplied free, and a large general correspondence is conducted on technical matters connected with the dairying and fruit industries.

Agricultural Seeds.—Another result of recent gradual yet rapid developments was the establishment in 1905 of the Seed Branch under a Commissioner (Mr. G. H. Clark). The Branch undertakes free of cost and with no charge for postage the analysis and germination of seed samples for farmers and seed merchants—a work that occasionally may be of special importance owing to the risk of sowing frosted and therefore valueless grain. The chief Seed Laboratory is at Ottawa, but a Branch Laboratory at Calgary, in southern Alberta, meets the convenience of western farmers. During the year ended March 31, 1910, the samples tested for purity and germination,

mostly grass and clover seeds, numbered 6,428, of which 1,188 were tested at Calgary.

Administration of the Seed Control Act of 1905 is also an important duty of the Branch. This Act, as amended, prohibits the sale of farm seed containing specified noxious weeds such as charlock, wild oats, sow thistle, ragweed, ergot, &c., and provides for the sale in two grades of timothy, alsike, red clover, and lucerne seed. Grade No. 1 must contain not more than five seeds per ounce of the weeds named for timothy, red clover, and lucerne, and ten per ounce for alsike, and must contain 99 per cent. of the kind represented. Of these ninety-nine seeds ninety must be capable of germinating. Seed not coming up to this standard but containing not more than five noxious weed seeds per 1,000 of good seed may be legally sold if it is not marked "No. 1" or otherwise represented as being of first quality. Provision lately has also been made for the fixing of percentage standards of vitality and for prohibition of the sale of seeds falling below two-thirds of the standard fixed, unless branded with the actual percentage of germination. The number of samples tested under the Act in 1910 was 294. Convictions were secured for the most serious violations, and publication of the names of the offenders acted as a further deterrent.

In co-operation with the provincial Departments of Agriculture the Branch assists in the organisation of competitions in fields of standing seed grain and of seed fairs and exhibitions. Competitions in standing fields of seed grain were instituted by the Branch in 1906, and they are increasing in popularity and value. The local arrangements are made by the agricultural societies under provincial government grants; the Seed Branch provides general assistance and undertakes the judging, for which the following is a usual scale of points:—

General appearance	20
Freedom from weeds	25
Freedom from rust, smut, blight, and insects	10
Freedom from other varieties and other kinds of grain	20
Apparent yield and quality of grain	25
Total	100

Similar assistance is given towards the organisation of seed fairs and of a large seed exhibition held annually in each province.

The Canadian Seed Growers' Association, which has grown into national proportions from modest efforts of twelve years ago, when Dr. J. W. Robertson and Sir William Macdonald offered prizes to children for selection of the largest heads of grain on their fathers' farms, is now in receipt of an annual grant from the Department of \$5,000 (1,027*l.*). Its members engage in the production of approved varieties of seed grain

upon a definite system of selection and registration, and the Association is doing good work in obtaining the more general use of high class seed produced on rational and scientific lines.

Agricultural Statistics.—Reorganised in 1905, the Census and Statistics Office, under the Chief Officer (Dr. Archibald Blue), is responsible for the decennial census, and the next has been fixed for June 1, 1911. The Canadian Census includes not only an enumeration of the people, upon which the legal parliamentary representation is based, but also a complete account of the natural products and economic resources of the Dominion. The agricultural particulars collected embrace the number and size of farms, the areas, yields and values of field crops, the numbers and values of live stock, including poultry and bees, the quantities and values of dairy products, the value and rent of lands, buildings, and agricultural machinery, labour and wages, and information as to minor or bye products, such as wool, eggs, honey, wax, and maple sugar. In the enumeration of live stock, horses and dairy cattle in towns do not escape compilation.

For the three North-West provinces of Manitoba, Saskatchewan, and Alberta, where the development is at present abnormally rapid, a quinquennial census of population and agriculture is provided for, and special inquiries, such as the postal censuses of 1906 (manufactures), and 1907 (dairying and agriculture of eastern Canada), may be ordered at any time by the Minister of Agriculture. Since 1908 the Office has undertaken the issue of monthly crop reports with estimates of area and yield of field crops and of the numbers and condition of live stock, as well as other statistical information based upon the reports of correspondents. The results are published in the *Census and Statistics Monthly*, together with reports of other Branches of the Department, crop reports from other countries, prices of Canadian produce in the British markets, &c., which make it to some extent an organ of the whole Department. A Publications Branch has lately been formed to undertake certain duties of an inter-departmental character. The Chief Officer of this Branch (Mr. T. K. Doherty) acts also as Canadian Correspondent of the International Agricultural Institute at Rome.

The following table shows the sums actually expended by the Department of Agriculture for general agricultural purposes during the fiscal year ended March 31, 1910. Some of the items are for capital expenditure, but as such items recur in some form or other every year the net total of 241,386*l.* may be taken as fairly representing the actual cost of a year's working in respect of agriculture. The total expenditure for 1909-10 of the Department (less revenue), including the cost of the non-agricultural branches, was 257,886*l.*

*Statement of Agricultural Expenditure of the Department of
Agriculture for the Dominion of Canada, 1909-10.*

For	Amount	For	Amount
	£		£
Experimental Farms	31,538	Exhibitions	32,190
Fumigation Stations (San José Scale Act)	1,027	Reindeer in Canadian Labrador	203
Live Stock Industry	10,237	Printing of Reports and Bulletins	1,771
Swine Commission	1,694	Salaries and Expenses	49,151
Dominion Exhibition	10,274		
Health of Animals	51,343	Total	251,982
Meat and Canned Foods Act	22,775		
Dairy and Fruit Industries	18,214	Less Receipts, including	
Cold Storage Experiments	839	Cattle Inspection Fees,	
Cold Storage Warehouses	4,949	Experimental Farm Sales,	10,596
Seed Control Act	9,904	Fines, and Casual Revenue	
Growth of Canadian Tobacco	1,019		
Census and Statistics Office	3,596	Net Total	2241,386
International Institute of Agriculture	1,256		

Other Departments.—Several other Departments of the Dominion Government exercise an important, if less direct influence upon the national agriculture. Land exploration, survey and settlement, the control of immigration, forestry reserves, astronomical and topographical surveys, the government of the unorganised territories, and the delimitation of boundaries come under the Department of the Interior. Acts for the inspection, weighing, and grading of corn are administered by the Department of Trade and Commerce, the country being divided into two grain inspection divisions for eastern and western Canada respectively. Any description of the elevator system under which farmers receive payment for grain delivered cannot be attempted now; but on August 31, 1910, there were throughout Canada, owned by companies and individuals, 1,840 grain elevators and warehouses with a total storage capacity of over 94 million bushels. All Canadian corn is sold by weight, the legal weights in lb. per bushel being for wheat, 60; for rye and maize, 56; for barley, 48; and for oats, 34. Sugar beet cultivation and the manufacture of beet-root sugar are making headway under special tariff provisions designed to enable sugar refineries to keep running over a longer period during the year than is possible where the supply comes only from home-grown sugar beet.

Commercial Feeding Stuffs and Fertilisers Acts were passed in 1909. They provide for the licensing of the manufacturers and for the registration, under specific numbers, of the brands sold. These numbers constitute the means of identification. The detailed provisions of the Acts are worthy of study in

connection with any proposed new legislation on the subject in the United Kingdom. Here it need only be mentioned that purchasers may obtain analyses of samples from the Department of Inland Revenue, by which the Acts are administered, at a fee of \$1 (1s.) for each sample. The Inland Revenue Department also prescribes the legal standards of quality for meat, milk and grain products under Section 26 of the Adulteration Act. Forecasts of the weather are issued by the Dominion Meteorological Service from Toronto. In 1909 a Commission of National Conservation was entrusted by Act of Parliament with the duty of studying and reporting upon the natural resources of the Dominion with a view to their development upon rational and scientific lines, and especially to the prevention of their wasteful exploitation at the expense of future generations.

THE PROVINCIAL GOVERNMENTS.

Each of the nine provinces of Canada has its own Department of Agriculture controlling various organisations designed to serve local and provincial needs. To avoid repetition, the more typical may be described in connection with Ontario—agriculturally, the richest and most highly developed of the provinces. All associated agricultural effort in Canada leans upon and derives its inspiration mainly from the State, and the Dominion or provincial government grants (sometimes both) are the chief support of non-political agricultural societies and institutions, while the fees for membership are, in most cases, only a subsidiary source of revenue. Another advantage of considerable value to these societies is that their reports are printed and distributed at government expense.

Ontario.—Much of the agricultural work undertaken by the Ontario Government has for centre the admirable Agricultural College and Experimental Farm, established in 1874 at Guelph—an institution probably unrivalled for comprehensive instruction in agriculture. The College and Farm together cover 600 acres. Of this area, the buildings and grounds occupy 30 acres, the farm 360 acres, and the garden with orchard, and the woodlands, each 75 acres. The remainder of the 600 acres is devoted to field experiments with cereals, fodder crops and roots. The institution is visited annually by about 40,000 persons. Twelve large buildings serve the various purposes of the College, including two for the residence and training of girls in domestic economy. In 1910 the teaching staff numbered fifty and the students 1,386, of whom 344 were taking the regular course. The 'four years' course at the College leads to graduation at the Toronto University with the degree of B.S.A. (Bachelor of Science in Agriculture). There

is also a two years' course for the Associate Diploma, and there are annual short free courses in various subjects open to farmers and farmers' sons. For Ontario students, the tuition fees are only 4*l.* per annum for the first and second years, and 10*l.* per annum for the third and fourth years. Owing to the long summer vacation usual in Canada, lasting about five months, combined with a system of payment for practical work during the session, it is possible for students to earn a large proportion of the cost of their college education and maintenance. The net expenditure for 1910 in all departments of the College was 32,573*l.*

During the last thirty years an Experimental Union, consisting of about 400 present and past members of the College, has arranged for the conduct of co-operative experiments by farmers in agriculture, forestry, horticulture, &c., the experiments being supplementary to those carried out locally at the College. The members pay a nominal annual subscription of 2*s.*, and the provincial Government makes an annual grant of about 550*l.* to defray cost of seeds, plants, fertilisers, &c. The experiments are of great practical and educational value, and are conducted by over 4,000 farmers throughout the province.

Associations for the breeding and registration of pedigree live stock and for the development of various branches of agriculture receive government grants under the Agricultural Associations Act, 1906, since amended, and consolidated in 1910. They are under the general superintendence of the Live Stock Branch, the chief officer of which is known as the Director, who also acts as Secretary-Treasurer for each. Amongst them are included the Ontario Horse Breeders' Association and the Dominion Breeders' Associations for cattle, sheep, pigs, and poultry.

General agricultural shows (or fairs) are held by societies organised under the Agricultural Societies Act, 1906, amended and consolidated in 1907. These are under the general management of a Superintendent of Agricultural Societies. Their grants in 1910 aggregated 21,514*l.*, distributed as follows:—

	£
Agricultural Societies' Grant . . .	15,411
Services and Expenses of Judges . . .	2,055
Spring Stock Shows . . .	719
Field Crop Competitions . . .	1,438
Seed Fairs . . .	103
Special Grants . . .	1,644
Expenses of Meetings . . .	144
Total . . .	<u>£21,514</u>

The grant of 15,411*l.* (\$75,000), which it is hoped may shortly be increased to 20,548*l.* (\$100,000), is divided amongst over 300 societies, most of which hold a fair or exhibition, though some use their funds for the purchase of pedigree sires. The maximum grant to any single society under the Act is \$800 (164*l.*). Other sources of income for each society are municipal grants equalling or exceeding those of the provincial Government, membership fees, and gate receipts. On the expenditure side, in addition to prizes and general expenses, considerable sums are paid for "special attractions," the fair element being always more or less in evidence. In the case of the three large city shows in eastern Canada, the government grants amount to \$2,500 (514*l.*) for Toronto, \$1,196 (246*l.*) for London, and \$1,304 (268*l.*) for Ottawa. The Canadian National Exhibition, held annually at Toronto by the Industrial Exhibition Association, is the largest agricultural show of Canada. At the exhibition of 1910, held from August 27 to September 12, the total prize money was about \$50,000 (10,000*l.*), and the total attendance was 836,000, an increase of nearly 100,000 over 1909, which also was a record show. On two days of the show in 1910 (at which, by the way, music was provided by the band of the Grenadier Guards from England) the number of visitors was estimated to reach 90,000 and 110,000 respectively. The gate receipts were 35,660*l.*, and the cash profits 8,642*l.*

Farmers' Institutes for the discussion of agricultural questions of a non-political character have existed in Ontario since January, 1885, when twelve meetings were held; those now in the province number 100, and are alert and progressive.

Each institute receives an annual government grant of 5*l.*, with copies of reports, &c., and each member pays the nominal annual fee of 1*s.* Women's Institutes, of which there are now 600, and special institutes for fruit, poultry, seed, creameries, &c., are also organised, all being under government supervision. In 1910, the total attendance at the institute meetings was nearly 301,000. Farmers' Institute Clubs, now in course of development, cover smaller areas, and the members, while joining with the institutes for meetings, also engage in co-operative purchase and sale, chiefly of agricultural seeds. They already number 164. In addition to the delivery of lectures, experts are now being employed for purposes of practical demonstrations in connection with live stock, seed, and fruit.

Education in Canada is organised entirely under provincial authority, and a recent development which is promising good results is the appointment by the Department of Education of teachers of agriculture in high schools. The Ontario

Department of Agriculture appoints the same men as district representatives. The cost of their maintenance is borne jointly by the Departments of Agriculture and Education and the county councils. These representatives, who must be graduates from Guelph, give agricultural instruction at the collegiate institutes (or secondary schools) and, for the use of farmers, open local bureaus of agricultural information more or less specialised according to the needs of the district. At present about sixteen counties in Ontario have taken advantage of this arrangement.

The Fruit Branch conducts a large experimental station in the Niagara peninsula and also smaller stations throughout the province. Last year demonstration orchards were taken over to be conducted by the Branch in order to prove to farmers that old orchards hitherto considered valueless could be profitably reclaimed. Nursery stock is inspected under the supervision of the Branch and, except evergreens, is fumigated with hydrocyanic gas. A series of orchard surveys recording the number of trees, varieties, age, methods of culture, pruning, spraying, fertilising crops, sales, &c., is also being carried out, with particulars in each case of methods that have given the best results. The province is divided into sixteen districts for the inspection of apiaries for disease, and experimental work in bee-keeping is also undertaken.

Dairying interests are promoted by a Branch under an officer called the Director of Dairy Instruction. The two principal dairymen's associations, one for eastern and the other for western Ontario, receive annual grants of \$2,500 (514 $\frac{1}{2}$.) and \$2,000 (411 $\frac{1}{2}$.) respectively; they hold conventions and local dairy meetings. After experience of arrangements under acts passed in 1904 and 1906, the Department in 1907 assumed complete responsibility for free instruction to cheese factories and creameries, while power was given to the instructors to enforce compliance with sanitary requirements. The two dairymen's associations mentioned have since 1907 and 1908 undertaken the institution of prosecutions for milk adulteration, and the fines imposed upon conviction have secured a marked decrease in the percentage of adulterated samples.

An active Corn-growers' Association receives a small grant of 100 $\frac{1}{2}$.; over 500,000 acres are devoted to corn (or maize) in the province. The Ontario Veterinary College, established in 1862, became a government institution in 1908, the net annual cost of its maintenance being about 6,000 $\frac{1}{2}$.. The Bureau of Industries, also a Branch of the Department, was established in 1882, chiefly for the collection and publication of agricultural statistics throughout the province. For all the principal

field crops there are continuous annual records of area and yield since 1882, which cannot be stated of any other Canadian province. Finally the Colonisation Branch of the Department deserves mention, for it is not yet generally realised that in northern Ontario, now being pierced by the new Grand Trunk Pacific Railway, there are at least 16,000,000 acres of fertile wheat land awaiting settlement.

Quebec.—In the French-speaking province of Quebec are agricultural and dairy societies, schools, farmers' clubs, institutes, and fruit-growing associations, all under the general control of the Quebec Department of Agriculture. Butter and cheese factories are under government inspection. Farmers' clubs and institutes bear to each other a reverse relationship to that which they bear in Ontario. In Quebec the club is the larger and the institute the smaller. Government grants of 5% as a minimum are made to the clubs on condition that they hear at least one agricultural lecture yearly; but their principal function is the co-operative purchase of seed grain, live stock and implements. The membership fee is \$1 (4s.) and certain sums are offered in prizes; the clubs number altogether 625 with a total membership of 60,000. There are 80 agricultural societies holding shows or exhibitions; these receive government grants aggregating over 8,219% out of total receipts of 28,150%. Both clubs and societies are managed by a Council of Agriculture appointed by the Department.

Competitions of agricultural merit or farm prize competitions are held in different districts in rotation, the rewards consisting of a gold medal for the competitor placed first and of silver and bronze medals with diplomas of merit. Eleven experimental fruit stations were established by the Department of Agriculture in different fruit-growing counties—six in 1898 and five in 1903. *The Journal of Agriculture and Horticulture*, an organ of the Department, has 72,000 subscribers. Although not under government control the fine new Agricultural College and Experimental Farm at Ste. Anne de Bellevue, near Montreal, built and endowed by Sir William Macdonald, may be referred to as an asset of great value to the English-speaking population. The College is affiliated to the McGill University at Montreal where students may graduate with the degree of B.S.A. as in the case of Guelph and Toronto.

Maritime Provinces.—Of the three relatively smaller Maritime provinces, Prince Edward Island depends upon agriculture, Nova Scotia has its iron, steel, and coal industries; and New Brunswick is largely devoted to lumbering and fisheries. The breeding of heavy horses is a profitable industry. In Nova Scotia, out of about 15,000,000 acres of

land, only about five million acres are owned by farmers, and of this area not more than half is cultivated. The Annapolis Valley is, however, one of the three principal fruit-growing regions of Canada. About thirty-three model orchards, intended to test the fruit-growing possibilities of the province outside the present fruit area, have been established under a provincial act of 1901. There is a large and increasing exportation of apples from the province. An Agricultural College at Truro has a teaching staff of six, who devote time also to the general administration of the Department of Agriculture—the principal of the College being also the Provincial Secretary for Agriculture. Grants are made to agricultural societies, constituted chiefly for the maintenance of pure-bred live stock.

In New Brunswick there are ninety agricultural societies in receipt of government grants for the improvement of live stock and seeds, the purchase of fertilisers, the holding of exhibitions and of competitions of standing field crops. Two dairy superintendents supervise the cheese factories and creameries and assist in the conduct of the dairy school. The organisation of farmers' institutes and of other educational agencies is also undertaken, and there are model orchards and orchard meetings.

In Prince Edward Island the total government grant for agriculture amounts to 1,336 $\frac{1}{2}$., and, though necessarily on a smaller scale than in the larger provinces, earnest efforts are being put forth to improve the agriculture of the island. An agricultural merit competition, as in Quebec, has recently been inaugurated, a silver medal being offered for competition in each of the three counties.

North-West Provinces.—Throughout the North-West various agricultural institutions already described under Ontario and eastern Canada are in process of rapid organisation and development, and the provincial Governments, hitherto more or less dependent upon the east for experts and teachers, are perfecting schemes of higher agricultural education. For Manitoba the College of Agriculture at Winnipeg has been in existence for five years. Attached to the new University of Saskatchewan, at Saskatoon, will be a College of Agriculture and Experimental Farm, the buildings for which are in course of erection. For these purposes 1,332 acres of land have been acquired, and a large area is being laid out in experimental plots. Both in Saskatchewan and Alberta grants are made for the destruction of prairie wolves, coyotes, gophers, &c., which will doubtless be exterminated as settlement increases.

In Saskatchewan the provincial Department of Agriculture is endeavouring to establish a permanent butter-making industry through co-operative creameries and a Superintendent

of Dairying. This officer controls all business transactions, except the delivery of the cream, which is arranged for by a local board of directors. The sales of the butter are effected by the Department, and the advances on the cream are made direct to the patrons (or contributors) twice monthly. Under dairying statutes of the province the Department makes loans, not exceeding \$1,200 (246 $\frac{1}{2}$.) each, to creamery companies at 3 per cent. interest, the loans being repayable within five years.

In Alberta creameries and cheese factories are rapidly increasing in number, and many of them are worked under government management. Creamery loans not exceeding \$1,500 (308 $\frac{1}{2}$.) are also granted at 3 per cent. interest. Cold storage facilities at Calgary, also provided by the Government, are available for the storage of creamery butter, which is sold largely in British Columbia and the Yukon Territory. Ten co-operative poultry fattening stations are worked under government management.

British Columbia.—In this, the largest and most picturesque province of the Dominion, the local Legislative Assembly has passed carefully framed acts establishing farmers' institutes, dairy and live stock associations, agricultural and horticultural societies, and co-operative associations. In addition to the usual work of farmers' institutes provision is made for the incorporation of bona-fide farmers into co-operative associations for the purchase and sale of farm produce and for the establishment of cheese factories, creameries, fruit canneries, mutual credit associations, &c. A Horticultural Board makes regulations for the prevention of diseases among fruit and fruit trees in orchards and gardens. Fruit growing being the principal agricultural industry of the province the government grants are largely directed towards its organisation and improvement.

Having thus attempted to describe briefly the leading agricultural enterprises of the nine provincial Governments of Canada, I may refer the reader for a comprehensive idea as to their nature and cost to the statement on pp. 111 and 112. In some cases the amounts there given are actual expenditures; in others they are taken from the estimates or appropriations, but in all cases the grants represent fairly the sums actually available. These for the nine provinces make the total of 368,209 $\frac{1}{2}$., which, added to the Dominion expenditure of 241,386 $\frac{1}{2}$., as stated on page 103, make a total of 609,595 $\frac{1}{2}$., the sum of public money devoted to Canadian agriculture in a year—not including, however, county and municipal grants of considerable aggregate value.

Government Grants for Agricultural Purposes, for one year, as administered by each of the nine Provincial Departments of Agriculture in Canada. (The source of information and year are stated within brackets.)

For	Amount	For	Amount
ONTARIO (Appropriations, 1909-10).		NEW BRUNSWICK (Appropriations, 1910).	
Civil Government salaries, printing of reports and bulletins, statistics, &c.	21,261	Agricultural Societies.	2,671
Agricultural College	53,222	Farmers' Institutes	616
Agricultural and Horticultural Societies	25,561	Dairying	1,438
Live Stock Branch	6,926	Live Stock	1,192
Farmers' and Women's Institutes	7,592	Extension of Markets.	863
Dairy Branch	12,503	Exhibitions	2,055
Fruit Branch	8,922	Horticulture	515
Colonisation Branch	17,296	Miscellaneous	799
Veterinary College	6,596	Salaries and Expenses	1,027
Total.	159,884	Total.	11,176
QUEBEC (Estimates, 1909-10).		PRINCE EDWARD ISLAND (Estimates, 1910).	
Agricultural Societies and Farmers' Clubs	31,530	Farmers' Institutes	206
Agricultural and Veterinary Schools	4,932	Standing Grain Competitions and Seed Fair	164
Dairying Industry	5,137	Model Orchards and Fruit Growers' Associations	71
Butter and Cheese Syndicates	6,164	Scholarships at Truro.	134
Horticulture and Fruit	1,336	Live Stock Judging Competition	12
Lectures on Agriculture	1,644	Printing and Advertising	92
Improvement of Rural Roads	12,329	Dairying Association	62
Exhibitions	3,082	Salaries and Office Assistance	595
Miscellaneous	1,890	Total.	1,336
Total.	68,044		
NOVA SCOTIA (Appropriations, 1909-10).		MANITOBA (Appropriations, 1910).	
Agricultural College and Farm	6,165	Agricultural Societies and Farmers' Institutes	6,370
Agricultural Societies	2,055	Agricultural College	15,410
Exhibitions	2,671	Noxious Weeds Inspection	616
Drainage Machine	616	Agricultural Statistics	514
Institute Meetings and Fruit Growing Associations	308	Miscellaneous Fairs and Societies	288
Demonstration Orchards	206	Salaries and Office Expenses	2,499
Agricultural Meetings	616	Total.	25,697
Importations of Live Stock	1,027		
Office and Travelling Expenses	1,747		
Total.	15,411		

For	Amount	For	Amount
SASKATCHEWAN (Public Accounts, 1909-10).	£	ALBERTA— <i>continued</i> .	£
Agricultural Societies, Farmers' Institutes, Crop Experiments, Exhibitions, &c.	11,840	Destruction of Wolves and Coyotes	5,184
Live Stock Industry	1,098	Destruction of Noxious Weeds	2,000
Dairying and Poultry, including advances on butter, eggs, and poultry	20,966	Dairying Industry	3,074
Weed Inspection, game preservation and destruction of noxious animals	3,768	Operation of Creameries, &c.	51,370
Publicity and Statistics	2,991	Poultry Industry	1,067
Bacteriological Laboratory research work and agricultural scholarships	2,033	Bacteriology and Pathology	1,038
Salaries and Expenses	2,782	Sugar Beet Industry	1,929
		Miscellaneous Grants	4,042
		Salaries and Expenses	5,199
			83,523
	45,478	Less Sales of Butter and other produce	54,727
Less: Receipts from Dairy Branch and Poultry Fattening Stations	21,136	Net Total	28,796
Net Total	24,342		
		BRITISH COLUMBIA (Estimates, 1910-11).	
ALBERTA (Public Accounts, 1909)		Agricultural and Horticultural Societies, Farmers' Institutes, &c.	12,740
Agricultural Societies	5,419	Dairying and Live Stock	1,592
Live Stock and Agricultural Institutes and Associations	2,225	Experimental Orchards, Board of Horticulture, Fruit Exhibitions, etc.	5,650
Judges at Exhibitions	411	Destruction of wolves, panthers, coyotes, etc.	5,137
Live Stock Breeders and Fairs Associations	565	General work of Department, including orchard inspection, preservation of fruit, etc.	4,110
		Salaries	4,294
		Total	33,523

SUMMARY.

Eastern Canada		Western Canada	
	£		£
Ontario	159,884	Manitoba	25,697
Quebec	68,044	Saskatchewan	24,342
Nova Scotia	15,411	Alberta	28,796
New Brunswick	11,176	British Columbia	33,523
Prince Edward Island	1,336		
Total	255,851	Total	112,358
		Grand Total	368,209

Such in briefest outline is a sketch of the forms which State aid to agriculture is now taking in Canada, the largest of His Majesty's self-governing Dominions. The information has been largely gleaned from the more or less voluminous reports, bulletins, and circulars issued by the Dominion and provincial Governments, supplemented by answers to special inquiries. Much that is interesting has had to be omitted, but in connection with the developments that now appear to be taking place in Great Britain the particulars given may lead to the consideration of methods successfully applied in Canada, respecting which more detailed information is readily obtainable. While it has been my aim to state facts of special present interest it is doubtless true that a more detached observer might find points for criticism or even give expression to complaints. No human institutions are exempt from either. But Canadian organisations are modern and democratic; they are what the people choose to make them. This at least can be said, that, served by able, practical, and enthusiastic workers, the Dominion and Provincial Departments of Agriculture in Canada are conducting the national industry along numerous paths of successful progress. State aid to agriculture is, however, justified not so much by any advantages it may confer upon a class as by the fact that improvement in agricultural production reacts upon every other section of the community and benefits the whole nation.

ERNEST H. GODFREY.

Department of Agriculture,
Ottawa, Canada.

CHURNABILITY OF CREAM.

IN the last number of this Journal there appeared an article by Mr. Ernest Mathews on "Dairy Cattle and the Butter Test." In this, he published an account of investigations into the number and relative sizes of the fat globules in milk, which had been carried out at the Cooper Research Laboratory, in connection with the dairy work at the Gloucester Show. It was foreshadowed, therein, that further investigation was required to determine how these or other factors affected the butter-making capability of different milks.

It is proposed, therefore, to give an account of what further has been done in this matter, at the Liverpool Show, and in the Cooper Research Laboratory. The present article will be supplemented by a full scientific report which, it is hoped, will appear in the *Journal of Agricultural Science*.

Such a report, it is felt, contains far too much mathematical calculation and matter of purely scientific interest to allow of its inclusion in this Journal. The writer is fully aware that the work has not yet reached a final stage, and writes this account in the hope of its helping others, working at the same or similar problems.

As in the previous year, the object in view was to find an explanation of the peculiar variation in the churnability of

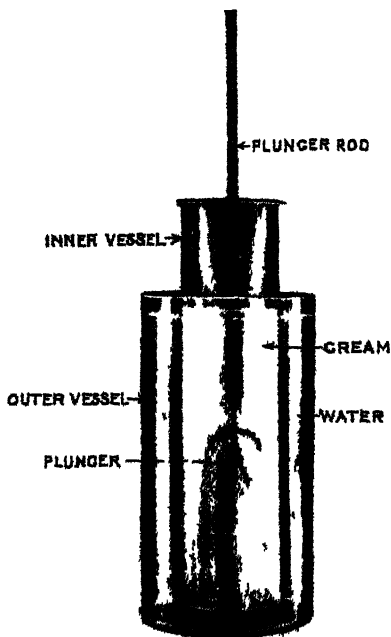


FIG 1 --Cream in Jar, showing the Plunger-head collapsed.

creams from different breeds of cows. After much preliminary work in this laboratory, the investigation was continued in the Dairy Pavilion on the R.A.S.E. Showground at Liverpool.

CHEMICAL ANALYSIS.

This work was conducted as in the previous year, and the results have been tabulated. These tables, together with data obtained by photographic methods, will be published in the purely scientific report alluded to above, so that merely a brief reference to them need be made in this article.

PHOTOGRAPHIC EXAMINATION.

This part of the investigation has been considerably developed. Last year photographs were taken of thin films of milk of *unknown* thickness (see page 37 *et seq.* of Journal R.A.S.E., Vol. 70). This year, however, by using a specially constructed glass cell, it was found feasible to ensure that all the photographs obtained were of films of milk of which the thickness was *known*. Thus, with a known thickness or depth of milk, it was possible, by counting and measuring the globules, to ascertain the volume of milk and the proportion of fat it contained, in any part shown in the micro-photograph. The figures so obtained, when compared with the results given by analysis, afford a very valuable check. The comparisons are shown in the following statement:—

	Number of globules counted										
	11 μ	10 μ	9 μ	8 μ	7 μ	6 μ	5 μ	4 μ	3 μ	2 μ	1 μ
16. Shorthorn .	—	1	—	1	5	10	29	97	213	295	456
17. South Devon	—	—	—	—	2	20	45	184	403	500	757
18. Jersey .	—	—	1	6	26	44	65	180	211	199	432
19. Red Poll .	1	1	1	—	15	41	57	155	255	423	601

	Percentage of fat (by volume) in each size globule											Total percentage of fat (by volume)	Percentage of fat by weight	Analytical result
	11 μ	10 μ	9 μ	8 μ	7 μ	6 μ	5 μ	4 μ	3 μ	2 μ	1 μ			
16. Shorthorn .	—	0.87	—	0.45	1.50	1.88	3.16	5.42	5.02	2.06	0.40	2.076	1.874	2.80
17. South Devon	—	—	—	—	0.60	3.77	4.91	1.028	3.50	3.49	0.66	3.331	2.995	3.94
18. Jersey .	—	—	0.64	2.68	7.78	8.29	7.09	8.93	4.03	1.39	0.38	4.213	3.800	3.33
19. Red Poll .	1.16	0.87	0.64	—	4.49	7.78	6.22	8.86	8.01	2.95	0.52	3.925	3.541	3.28

It must be pointed out that in calculating from the very small portion of the film of milk visible under high magnification, it was necessary to multiply by 1666 to get the result in the case of a cubic millimetre even. Consequently, the very slightest error made in measuring the micro-photograph is multiplied over sixteen hundred fold. Hence the agreement between the figures obtained from the photographic method of examination, and those obtained by chemical analysis, shows that the photographs taken under the new system are fair representations of the milk examined. It is interesting to note that the average error made in the measurements of

all the micro-photographs taken was .23 per cent., or less than one in four hundred.

The main object of these experiments, however, was to see whether any explanation of the variations in the churnability of different creams could be discovered, the method of photographing the milks from which the creams were obtained being only an incident in the investigation. It actually proved very useful, however, as it helped to get the negative

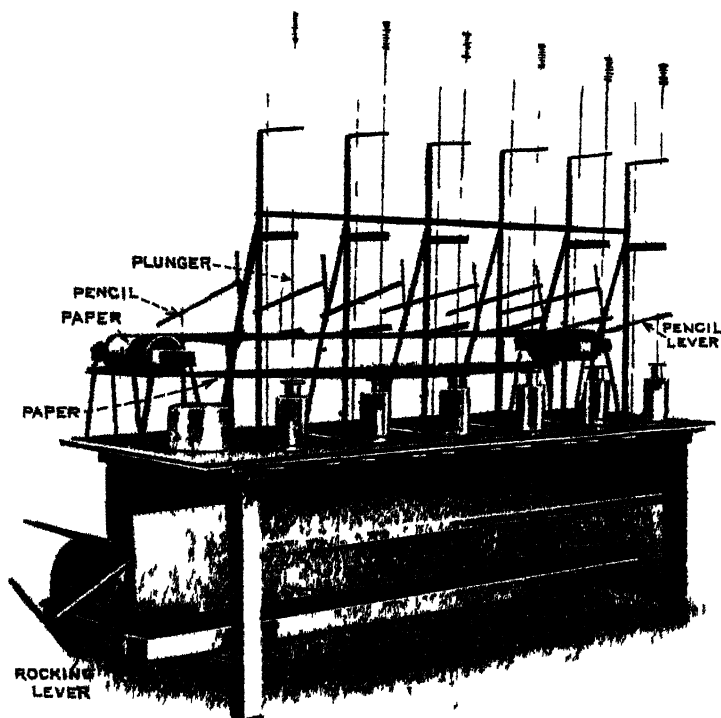


FIG 2—Apparatus for recording Length and Number of Strokes whilst churning

result referred to later. The method may prove of use, it is hoped, for further investigations.

INDIVIDUAL VARIATION.

An important question to decide, before it is possible to conduct exhaustive experiments, is that of the amount of the individual variations which exist in samples of milk obtained

from different cows of the same breed. In order to test this factor, six samples of milk from six different Shorthorn cows were taken, as also four samples from individual Guernsey animals, all of which were in the Showyard at Liverpool.

Each sample of milk was analysed chemically, and, in order to see if any law governing the variations could be discovered, the following ratios were worked out :—

Fat : Lactose.

Lactose : Proteid.

Proteid : Fat.

The average of each class was taken, and the amount of variation from this average in each case. It was found that the variations were large, and indifferently positive and negative. In short, no regularity in variation could be found, and it is obvious that experiments must be made with a larger number of milks than six, if any useful conclusion is to be drawn.

Taking the results of microscopical examination, the sizes and numbers of the fat globules in each individual sample of milk were plotted as curves. The same was done, also, for the mixed samples of milk, and it was hoped, by this method, that the milks could be classified according to the size of the globules. In some cases, it did appear as though they could be classified in this manner, as is shown by the samples of milks given below *in extenso*; both being from individual Shorthorn cows, however.

Milk A.		Milk B.	
Size of globule	Percentage of total fat present	Size of globule	Percentage of total fat present
2 microns . . .	8.9	2 microns . . .	2.75
3 " . . .	28.7	3 " . . .	6.45
4 " . . .	33.6	4 " . . .	11.75
5 " . . .	15.3	5 " . . .	12.60
6 " . . .	9.1	6 " . . .	22.80
		7 " . . .	22.40
		8 " . . .	17.60
	95.6		96.35

Contrasting these two milks, it is obvious that the first is of more uniform nature as regards the size of the globules than the second; in the first sample, a range of from two to six microns in the size of globules covers nearly 96 per cent. of them, while in the second, a range of from two to eight microns is required to cover practically the same percentage.

Results such as the above, shown by curves and tabulated in different ways, point to the fact that a visual examination leads to erroneous conclusions, and that absolute measurement combined with tabulation is necessary. From the results which have been obtained, it is impossible to classify the different breeds in any way whatsoever, in relation to their globules: for there is as much variation in the individual milks of the same breed as there is in the different breeds. With many more figures, obtained by measurement of the globules and properly tabulated, it may be possible to classify the milks from different breeds of English cattle: but it is obvious that

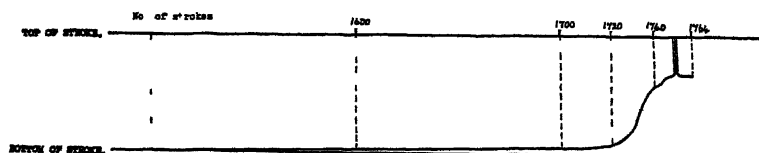


FIG 3—Curve showing Termination of Churning Stroke. Drawn by Apparatus. Fig 2

when the milks are subjected to exact determination, it is impossible to divide them into "large," "medium," or "small" globuled milks as has been done by D' Hont in the case of the milks obtained from some few English and foreign breeds of cattle.

Before such figures can be correlated with the churnability of any particular cream, it is necessary to have some absolute method of stating the degree of churnability.

CHURNABILITY.

An apparatus was constructed, by which the mechanism of churning could be registered, so that some accurate standard of churnability might be fixed upon as regards different creams. It was found that any instrument on the principle of the "end over end" churn was not suitable, and that it was necessary to adopt a modification of the "plunger" churn. After a very considerable number of preliminary trials, the following apparatus was constructed (Fig. 2).

An accurately measured quantity of the cream is placed in a long narrow glass jar (see Fig. 1). So as to control the temperature, this narrow glass jar stands in a larger vessel, which is kept filled with water at the temperature at which it is decided to churn. Into the inner jar, which represents the body of the churn, a specially constructed "plunger" (see Fig. 1) is fitted. This plunger consists of a rod and head, the head being a metal disc divided into two halves which are hinged to one another. The construction of the hinges is such that when the plunger falls down into the cream, the head is

expanded to its full extent, so offering the greatest resistance to the plunger passing through the cream. When the plunger is drawn up through the cream, the two halves of the disc which formed the head, fall together, and so offer the least possible resistance to the upward passage of the plunger through the cream. The up and down movement of the plunger rod actuates a lever (see Fig. 2) to which a pencil is attached. This pencil is applied to a moving roll of paper, and records on it the exact length of each stroke made by the plunger through the cream. The plunger falls through the cream simply by its own weight, but is lifted through it by means of a special mechanism working from the rocking lever and the rocking shaft underneath the machine. The machinery is so adjusted that the plunger has only just time to fall through the cream when it is first put into the glass jar which represents the body of the churn. As the cream gets thicker the plunger does not fall so far through it; and so a shorter line is drawn on the paper. When the butter "comes," it is possible for the plunger to be drawn up, because the head collapses, and so offers little resistance; but the downward stroke of the plunger is arrested owing to the resistance offered by the butter particles to the open disc. It was expected that by placing six of these jars in a row—each containing different creams—and churning them simultaneously the churnability of each sample of cream could be accurately compared. In some experiments 6,000 to 7,000 strokes were required before the butter came; but, though a large number of experiments were made, it is felt that for purposes of comparing different breeds further research work is necessary.

One curve drawn by the apparatus, however, is published for purposes of illustration. This (Fig. 3) shows what would appear to be a normal course of churning. In 1,500 strokes it will be seen that the

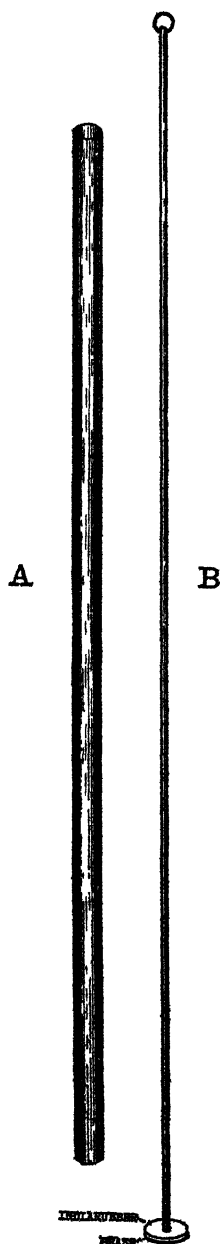


FIG 4.—Apparatus for sampling Milk.

plunger traversed the full length of the strokes because no change had taken place in the cream. After the fifteenth hundred the strokes became gradually shorter, showing that the cream gradually was getting thicker. After the 1,720th stroke, the ups and downs rapidly got very short indeed, and by the 1,740th stroke the butter "came." The very short strokes in Fig. 3 are seen because the plunger head falls through a shallow layer of butter-milk before being held up by the butter which has just come. Other curves will appear and be discussed in the more complete article previously referred to. Meanwhile, it is intended at the next Show of the

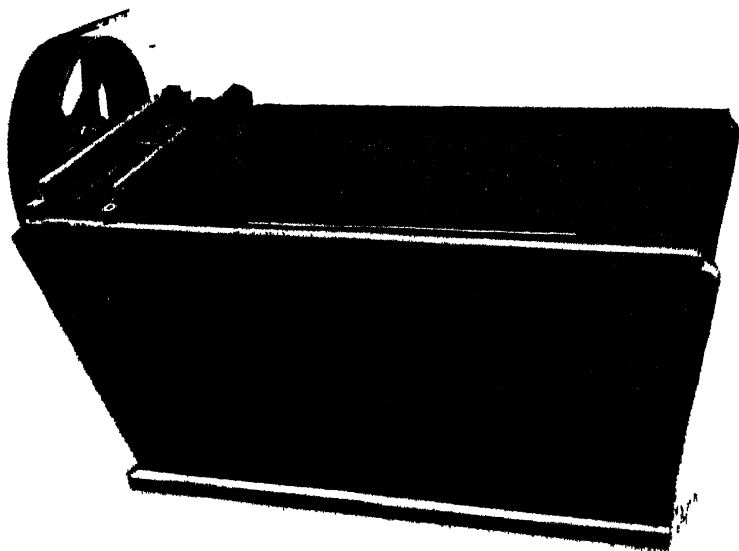


FIG. 5—Vat for churning different Creams at same temperature

Society, at Norwich, to continue these experiments in the Working Dairy, because only on the Showground of the "Royal" is it possible to obtain, and so to experiment with, creams from all the breeds of British pedigree dairy cattle.

CHURNING AT DIFFERENT TEMPERATURES.

It may be noticed that no remarks have been made about the temperatures at which the above curve (Fig. 3) and others, were obtained: this omission was unavoidable. To ascertain the best temperature for churning creams from different breeds, another set of experiments was carried out.

An apparatus was devised which would churn, on the end over end principle (see Fig. 6), six separate lots of cream of exactly the same amount, in exactly the same manner, all at the same time, and so arranged that all six samples were churned under water in the same vat (see Fig. 5), which was kept at a constant temperature while the operation of churning was going on. At each churning, six ounces of cream (see Fig. 6) were placed in jars, each one allotted to the produce of one particular breed, so that figures for six different varieties of cattle were obtained. The results were very striking, there being a marked loss of butter fat at the higher temperatures. The breeds differed considerably; but for fear of doing injustice by statements based upon the results of a limited number of

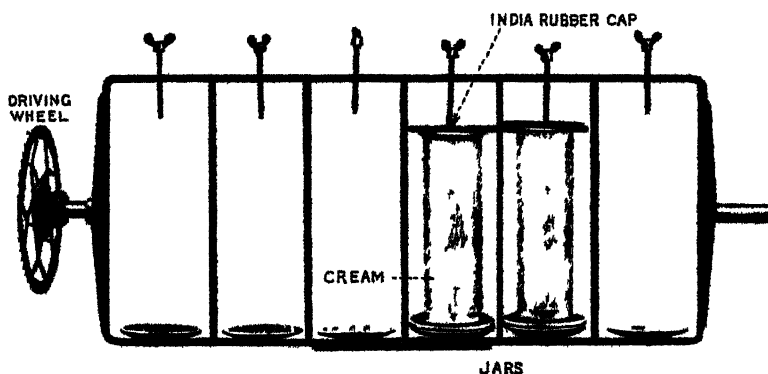


FIG. 6.—Jars arranged to churn different Creams simultaneously

trials, it is proposed to wait till the experiment has been repeated before making any "breed" figures public. The whole work will, it is hoped, be continued next year; and if the quantity of cream available is sufficient, these experiments will be repeated several times.

SAMPLING MILK.

That accurate sampling is of great importance is recognised by all who have worked on the subject, and sampling by means of a tube is generally recognised as the most satisfactory method. Experience shows that if a wide tube (1 in. in diameter) is used, the milk is liable to escape; while if a very narrow tube is used, it must be lowered into the milk very slowly, otherwise a fair sample cannot be obtained. The

same remark applies to a wide tube constricted at the lower end. The apparatus recommended is seen in Fig. 4. A disc of metal covered with rubber (see p. 119), is lowered by means of a narrow rod, attached to the disc, into the milk which has to be sampled. Over this narrow rod a glass tube having a diameter of 1 in. is slipped. A tube of this size may be lowered into the milk quite quickly. The glass tube is then pressed against the rubber lining of the disc, which prevents the milk escaping, and the whole apparatus is withdrawn. Such a tube immersed in milk to a depth of 2 ft. 6 in. will withdraw a 12 oz. sample. A rubber cone in place of the disc is found to be an improvement. If the end of the tube is slightly expanded, there is no difficulty in preventing the milk from running out.

W. F. COOPER.

Cooper Research Laboratory,
Watford

CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

AGRICULTURAL interests are only affected directly by the legislation of 1910 to a very small extent. The Development and Road Improvement Funds Act, 1910 (10 Ed. 7 c. 7), amends the Development and Road Improvement Funds Act, 1909, by increasing the number of Development Commissioners who may be appointed from five to eight. It also deals with the pensions of Commissioners and members of the Road Board, and corrects a clerical error in Section 11, Sub-section 5, of the Act of 1909.

The Diseases of Animals Act, 1910 (10 Ed. 7 and 1 Geo. 5 c. 20), deals with the exportation of unfit and diseased horses, and by Section 1 prohibits, except in such cases as may be prescribed by order of the Board of Agriculture and Fisheries, the shipping of any horse from any port in Great Britain to any port outside the British Islands, unless immediately before shipment the horse has been examined by a veterinary inspector appointed by the Board, and has been certified by him to be capable of being conveyed to the port and disembarked without cruelty. The fee for examination is payable by the owner of the horse before it takes place. Power is given to the veterinary inspector to slaughter, without the consent of the owner, any horse examined and found by him to be in such a physical condition that it is cruel to keep it alive. Section 3 provides that, if any horse shipped from any port in Great Britain to any port outside the British Islands has a limb broken, or is otherwise seriously injured while on board, so as to be incapable of being disembarked without cruelty,

the master of the vessel shall forthwith cause the animal to be slaughtered, and every vessel on which a horse is so shipped must carry a proper killing instrument to be approved by the Board of Agriculture and Fisheries. Under Section 7 the provisions of the Act do not apply in the case of shipment of any thoroughbred horse certified by a steward or secretary of the Jockey Club to have arrived in Great Britain not more than one month before the date of shipment for the purpose of being run in a race, or to be shipped in order to be used for breeding purposes. An order has been made by the Board of Agriculture and Fisheries, dated September 13, 1910, under the Act, that Section 1 shall not apply to (a) any horse, ass, or mule shipped to any port which is not in Europe; or (b) any horse, ass, or mule intended for breeding, racing, or exhibition, and of which the Board are satisfied, regard being had to its value and the purpose for which it is imported, that a veterinary examination is not necessary, but in the latter case a permit signed by an inspector or other officer of the Board must be obtained.

The Small Holdings Act, 1910 (10 Ed. 7 and 1 Geo. 5 c. 34), provides that where a Council or a landlord at the request of a Council terminates a tenancy of land by notice to quit, with a view to the use of the land or any part thereof for small holdings, the tenant shall be entitled to compensation for disturbance as under the Agricultural Holdings Act, 1908, Section 11, in cases where a landlord terminates a tenancy without good and sufficient cause and for reasons inconsistent with good estate management. The compensation is limited to the loss or expense directly attributable to the quitting which the tenant may unavoidably incur upon or in connection with the sale or removal of his household goods or his instruments of husbandry, produce, or farm stock on or used in connection with the land. The tenant must give the Council a reasonable opportunity of making a valuation of the goods, implements, produce, and stock, and must make the claim within three months after the time at which he quits. Any difference arising is to be settled by arbitration, and any compensation paid by a Council under an award or with the consent or approval of the Board of Agriculture and Fisheries will be repaid by the Board out of the Small Holdings Account. The operation of the Act is limited, for it only appears to apply where a tenancy as a whole is terminated by notice to quit, and not where part of a farm is taken and the tenancy extinguished by a compulsory purchase or hiring order made under the Small Holdings and Allotments Act, 1908. Further, the Act has no application to a case where land is taken not for small holdings but for allotments.

Agriculture, however, may to some extent be indirectly affected by the very important and much discussed measure known as the Finance (1909-1910) Act, 1910 (10 Ed. 7 c. 8), which imposes the new land taxes, viz., "Increment Value Duty," "Undeveloped Land Duty," "Reversion Duty," and "Minerals Rights Duty." Only the first two of these appear to have any bearing on agricultural land, for "Minerals Rights Duty" applies to minerals only, and "Reversion Duty" need not be considered, as it is not charged on the determination of a lease of any land which is at the time of the determination agricultural land nor on the determination of a lease, the original term of which did not exceed twenty-one years. Increment value duty and undeveloped land duty do, however, affect agricultural land to some extent, though it is difficult to foresee, and scarcely within the province of this article to say, what bearing they may eventually have on the pursuit of agriculture in this country.

Increment value duty is at the rate of 20 per cent. on any increment or rise in the site value of land and is leviable on the occasion of any transfer or sale of the fee simple of the land or of any interest in the land, and on certain other occasions, including the owner's death, but under Section 7 of the Act it is not charged in respect of agricultural land while that land has no higher value than its market value at the time for agricultural purposes only. And it is further provided that any value for sporting purposes or for other purposes dependent on the use of the land as agricultural land shall be treated as value for agricultural purposes only, except where the value for any such purpose exceeds the agricultural value of land. "Agriculture" for the purposes of this part of the Act is defined as including the use of land as meadow or pasture land, or orchard, or osier, or woodland, or for market gardens, nursery grounds, or allotments. The result is that so long as the market value of land is attributable to its value for agricultural purposes only, or for such purposes plus any value for sporting or other like purposes which do not *per se* exceed the agricultural value, no increment duty is chargeable. If, however, land in fact used for agriculture has a market value exceeding its value for that purpose, *e.g.*, if it has a higher value for building, for a golf course, or for a grouse moor, it will on a sale or any of the other occasions on which this duty is leviable become liable to increment value duty, if there has been a rise of more than 10 per cent. in its site value.

There is an exception from the duty in favour of the small occupying owner by Section 8, Sub-section 2, which provides that increment value duty shall not be charged on the increment value of land where immediately before the occasion on

which the duty is to be collected the land was and had been for twelve months previously occupied and cultivated by the owner thereof, and the total area of the land together with any other land belonging to the same owner does not exceed 50 acres and the average total value of the land does not exceed 75*l.* per acre. But this exemption does not apply to any land occupied together with a dwelling-house the annual value of which, as adopted for income tax under Schedule A. exceeds 30*l.*

Undeveloped land duty is an annual duty at the rate of one halfpenny for every 20*s.* of site value charged on "undeveloped land." "Undeveloped land" *prima facie* includes all agricultural land, for by Section 16, Sub-section 2, land is to be deemed "undeveloped" if it has not been developed by the erection of dwelling-houses or of buildings for the purposes of any business, trade, or industry other than agriculture (but including glasshouses or greenhouses), or is not otherwise used *bona fide* for any business, trade, or industry other than agriculture. If this section stood alone all agricultural land would be liable to this duty, but relief is given by Section 17, which by Sub-section 1 exempts from the duty any land the site value of which does not exceed 50*l.* per acre, and by Sub-section 2 provides that in the case of agricultural land the site value of which exceeds 50*l.* per acre, undeveloped land duty shall only be charged on the amount by which the site value of the land exceeds the value of the land for agricultural purposes. Thus assuming the site value of agricultural land to be 100*l.* per acre, which value is solely attributable to its fertility or other exceptional advantages as agricultural land it will not bear undeveloped land duty. If, however, it is worth 100*l.* on account of its being near a town and suitable for building cottages or villas, while if its agricultural value alone were taken into account the value would be only 50*l.* per acre, the owner will pay $\frac{1}{2}$ *d.* in the \pounds on the difference between 50*l.* and 100*l.*, viz. at the rate of 2*s.* 1*d.* per acre per annum. Section 18 contains a total exemption in favour of an owner and occupier of agricultural land who cultivates it himself when the total value of the land together with any other land belonging to the same owner does not exceed 500*l.* There are certain other exemptions from the duty which it is not necessary to consider here, the net result so far as agriculture is concerned being that agricultural land is not liable to the duty if its site value does not exceed 50*l.* per acre, or, if it has a greater site value than 50*l.*, unless and so far only as that site value exceeds its value for agricultural purposes.

All land, whether subject to the duty or not, is by virtue of Section 26 to be valued by the Commissioners of Inland Revenue, and for that purpose any owner of land, and any

person receiving rent in respect of any land must, on being required by notice from the Commissioners, furnish the Commissioners with a return containing such particulars as the Commissioners may require as to the rent received by him and as to the ownership, tenure, area, character, and use of the land, and the consideration given on any previous sale or lease of the land, and any other matter which may properly be required for the purpose of the valuation of the land. It is under this provision that the now famous Form IV. has been distributed throughout the country. It is not possible here to deal with the various values that have to be ascertained under the Act, but it may be mentioned that "assessable site value," which for purposes of taxation is the important value, assumes that the land is divested of any buildings and of any other structures (including fixed or attached machinery) on, in, or under the surface which are appurtenant to, or used in connection with, any such building, and of all growing timber, fruit trees, fruit bushes, and other things growing thereon, and allowance is made for the expenditure necessary in order to divest the land of buildings, timber, trees or other things of which it is to be taken to be divested, and of which it would be necessary to divest it for the purpose of realising the full site value.

Section 61, sub-section 5, of the Act is intended to give relief to the owners of woodland by enacting that in the case of an estate comprising land on which timber, trees, or wood are growing, passing on death, the value of the timber, trees, or wood, shall be aggregated with the other property passing on the death of the deceased for the purpose of determining the rate of estate duty; but the estate duty which would be payable on the principal value of the timber, trees, or wood, shall not be payable thereon but shall be payable on the net moneys (if any), after deducting all necessary outgoings since the death of the deceased, which may from time to time be received from the sale of the timber, trees, or wood when felled. This provision will make it necessary to have careful valuations made of timber and trees on the death of an owner of woodlands and a careful account kept of all subsequent outgoings in respect thereof and sales of timber.

Section 69 of the same Act extends, in the case of agricultural land, the relief from income tax under Schedule A already afforded by enacting that if the owner of any land shows that the cost to him of maintenance, repairs, insurance, and management, according to the average of the preceding five years has exceeded one-eighth part of the annual value of the land as adopted for the purpose of income tax under Schedule A he shall be entitled, in addition to the one-eighth reduction of assessment allowed under section 35 of the Finance Act, 1894, on making

a claim for the purpose, to repayment of the amount of the duty on the excess not exceeding one-eighth part of the duty on an amount equal to the annual value. For the purposes of this section the term "maintenance" includes the replacement of farmhouses, farm buildings, cottages, fences, and other works where the replacement is necessary to maintain the existing rent. The section applies to any land (inclusive of farmhouses and other buildings, if any) the assessment on which is for the purpose of collection reduced under Section 35 of the Finance Act, 1894.

II.—DECISIONS OF THE COURTS.

1. *Labour*. There have been during the past year, as in former years, a large number of decisions on the Workmen's Compensation Act of 1906. It would be impossible in the space allotted to this article to deal with these, and in many cases they do not appear to have any particular bearing on the risks incident to agricultural labour which fortunately are considerably less than in many other forms of employment. The case of *Clover Clayton & Co. v. Hughes* (1910, A.C. 242; 79 L.J.K.B., 470) should, however, be noted as it shows the risk an employer may run who employs a labourer suffering from a disease which may prove fatal owing to a strain arising out of his ordinary work. The workman in this case was suffering from an aneurism in an advanced stage, the condition of which was such that he might have died at any moment, even in the course of his sleep. He died while at work from rupture of the aneurism which was brought about by his screwing up a nut in the course of his ordinary work which involved no exceptional exertion. The House of Lords held (though two noble lords dissented from the decision) that the man died from an "accident arising out of his employment" and that his employers were liable to pay compensation to his widow. This case shows the wide construction which the Courts are disposed to give to the word "accident."

Anderson v. Balfour (1910, 2 Tr.R., 297) is an Irish case under the same Act which also may be noted. There a game-keeper, while engaged in the discharge of his duties, was attacked and beaten by poachers as the result of which he was injured. It was held that he had been injured by "accident" within the meaning of the Workmen's Compensation Act, 1906, and was therefore entitled to compensation.

2. *Stock*. The first case to be mentioned is that of *Lowery v. Walker* (27 T.L.R., 83), the decision on which, in the Court of Appeal, was noted in the last number of this Journal at page 145. That Court held that the defendant, who occupied a field in which he placed a savage horse and over which there was no

right of way was not liable for injuries caused to the plaintiff who crossed the field without the defendant's express permission. The plaintiff appealed to the House of Lords, who reversed the decision of the Court of Appeal. As there was a finding of the County Court Judge to the effect that the defendant knew that the field was habitually used by the public as a short cut, although there may have been no right of way across it, and that the horse he had put there was ferocious, it was decided that he owed a duty to the public crossing the field to give notice of probable danger from the horse, and that as he had failed to give such notice he was liable for the injuries caused to the plaintiff. The result of this decision seems to be that a burthen is imposed on a farmer whose field may be crossed to his knowledge by members of the public, though without any right of way, to give public warning of any danger from any savage animal he may place there.

Maclean v. Laidlaw (1909, S.C. (J.) 68) is a Scottish case under the Sheep Scab Order of 1905 of the Board of Agriculture and Fisheries, which provides that "every person having or having had in his possession or under his charge a sheep affected with, or suspected of, sheep scab, shall with all practicable speed give notice of the fact of the sheep being so affected or suspected, to a constable of the police force for the police area wherein the sheep so affected, or suspected is or was." It was held that in a prosecution for a contravention of this provision if it is proved that it was within the knowledge of the accused that a reasonable suspicion of sheep scab existed, it is not necessary in order to a conviction to prove that the accused himself shared the suspicion. Whether there is or is not a reasonable suspicion is a question of fact in each case.

The case of *Potter v. Challans* (102 L.T., 325 ; 74 J.P., 114) arose under the Cruelty to Animals Act, 1849. The respondent was summoned for causing a sheep to be ill-treated. Evidence was given that a sheep belonging to him which had been attacked by flies was seen in one of his fields, and two days later was found dead with a large wound on the back, that it must have died from exhaustion owing to its being eaten by maggots and must have suffered great pain, and that the wound did not appear to have been treated or dressed. Evidence was also given that the respondent said that he knew some of his sheep were affected with fly and that he had sent a man to dress the wounds. The Justices, without calling upon the respondent, dismissed the summons, being of opinion that there was not sufficient evidence that the respondent had unlawfully and cruelly caused the sheep to be ill-treated. The Court of King's Bench held that it could not be said that the

Justices had taken a wrong view or that they had misdirected themselves. The prosecution therefore failed.

The question of damages for breach of a contract for service by a stallion was considered in *Sapwell v. Bass* (1910, 2 K.B., 486; 79 L.J.K.B., 932). The defendant was owner of a famous stallion named Cyllene and contracted with the plaintiff, who was a breeder of racehorses, that Cyllene should during the season of 1909 serve one of the plaintiff's brood mares at a fee of 300*l*. In July, 1908, the defendant sold Cyllene for 30,000*l*. to go to South America, and was therefore unable to carry out his contract. The defendant proved that the average profit he had made out of foals by Cyllene in previous years was 700 guineas, but one of the plaintiff's mares served by Cyllene in 1908 had proved barren. The plaintiff, in these circumstances, claimed to recover damages for the expected profit he had lost through the defendant's breach of contract. It was held that there was no evidence of any legal damage suffered from the breach of contract, the damages claimed being too remote to be recoverable as they depended entirely on contingencies or chances.

The exemption of a farmer's dog from the necessity of a dog licence was dealt with in *Egan v. Floyd* (102 L.T., 745; 74 J.P., 223; 8 L.G.R., 495), where it was held that the exemption from duty granted to the owner on the ground that the dog is kept solely for the purpose of tending sheep or cattle on a farm is not destroyed by proof of an isolated instance of the use of the dog for catching rabbits at harvest time in a harvest field, with the knowledge of but without encouragement on the part of the owner. Lord Alverstone, however, stated that if it were found in any other case that the dog's owner had so purposely used the dog the conclusion of the Court would be otherwise, and it would certainly be prepared to hold that there had been evasion of the terms of the exemption.

The liability of a railway company to maintain sufficient gates on a level crossing was considered in *Parkinson v. Garstang and Knott End Railway* (1910, 1 K.B., 615; 79 L.J.K.B., 380). The plaintiff owned a horse which, in consequence of the inefficiency of the plaintiff's gates, strayed on to a public footpath which crossed the railway at a level crossing. He then got on to the railway through the gate at the level crossing, which was open owing to a defect in the fastening, and was killed. It was held that Section 61 of the Railways Clauses Act, 1845, imposed on the railway company an obligation to erect and maintain good and sufficient gates or stiles where the railway crossed any footway on the level as a duty owed to all the world, and not merely to owners and occupiers of adjoining land, and they were therefore liable for the loss of the plaintiff's horse.

In *Coaker v. Willcocks* (27 T.L.R., 137) a question as to the

right of impounding sheep for trespass arose. The plaintiff was a commoner having a right to pasture sheep on Dartmoor, and put some Scottish sheep there which, being more active than the ordinary sheep of the moor, got over the fence of the defendant, who was owner of an intake. He distrained them *damage feasant* and impounded them. The plaintiff sued for damages for illegal distress, but he failed, as the Court held that although the defendant was under an obligation to fence against commonable animals (which included sheep) by the custom of the moorland, the obligation did not extend to sheep of the peculiarly wandering and active description which characterised the plaintiff's Scottish sheep. They also held that the defendant was entitled to impound at any place within the hundred although more than three miles from the place of seizure.

3. *Landlord and Tenant*. There have been some interesting decisions under this head during the year. In *Parker v. Jones* (1910, 2 K.B., 32; 79 L.J.K.B., 921) the landlord in 1896 let a house and field to Hamer on a yearly tenancy, and the lease contained a covenant by the lessee not to underlet the whole or any part of the demised premises without the leave, in writing, of the landlord. On November 12, 1899, Hamer, without the leave of the landlord, sub-let the land to the plaintiff on a yearly tenancy, but neither the landlord or his agent had knowledge of this sub-letting. Hamer surrendered his lease to the landlord in June, 1909, who thereupon re-let the property to the defendant. The plaintiff remained in possession until the defendant entered and turned his cattle out, whereupon the plaintiff brought the action to recover possession and for damages. The Court held that the surrender by Hamer did not affect the plaintiff's tenancy, though it would have been otherwise if Hamer had forfeited his lease by breach of covenant. The case also might have been different if the landlord had entered and treated the plaintiff as a trespasser. As between the plaintiff and the new tenant the plaintiff's tenancy could not be got rid of by the landlord granting another lease incompatible with it. In *Matthews v. Smallwood* (1910, 1 Ch., 777; 79 L.J.Ch., 322) it was held that where there is a patent ambiguity in a lease the counterpart may be looked to for explanation, and in that case the ambiguous word "covenant" in the lease was proved to be in the plural "covenants" in the counterpart.

The defendants in *Hopley v. Tarvin Parish Council* (74 J.P., 209) were a parish council who took a lease of 12½ acres of land in plots for allotments and covenanted to keep the demised land "clean and in good heart and condition." In June, 1909, the plaintiff, who was the lessor, served a notice on the Council with a view of forfeiting the lease, setting out that the Council had not kept the premises clean and in good heart and condition

and requiring them to remedy their breaches of covenant and make compensation for the same. In November, 1909, the plaintiff commenced an action against the Council, alleging that they had not remedied the breaches of covenant complained of and claiming possession of the land. At the trial evidence was given that at the date of the notice all the plots were in a bad state and condition, that at the date of the writ three or four of the smaller plots were in a fairly clean condition, but that it would take at least from one to two years from the date of the notice to put the whole of the 12½ acres in good heart and condition. The Council objected that the notice was in general terms and was not divisible, and that a reasonable time had not been allowed them to remedy the breaches. It was held that as sufficient time had not been allowed to satisfy all the requirements of the notice, the notice was premature and must be dismissed.

There have been two Scottish cases under the Agricultural Holdings Act which are of considerable importance. *Stewart v. Williamson* (1910, A.C., 455 : 80 L.J.P.C., 29) came before the House of Lords on appeal from the Scottish Court, and the question was whether a valuation of sheep stock, to be paid for according to the terms of the lease at the expiry of the lease by the proprietors or incoming tenant, should be made according to the valuation of men mutually chosen, with power to name an "oversman" or umpire, or be referred to a single arbitrator under Section 11, Sub-section 1, of the Agricultural Holdings (Scotland) Act, 1908, which corresponds with Section 13, Sub-section 1, of the Agricultural Holdings Act, 1908, now in force in England. The House of Lords held that the matter was one which must be referred to a single arbitrator under the Act, notwithstanding the express provision of the lease. It is not, however, quite certain that the decision could have been the same if it had arisen under an English lease, as the Lord Chancellor pointed out that the word "arbitration" in Section 11 of the Act included such a reference according to the accepted Scottish legal terminology, but he said that if this were an English case the authorities drew a marked distinction between arbitration and valuation. Lord Halsbury, however, went further than the Lord Chancellor, and said that he believed that the word "arbitration" had an ordinary meaning in the English language which prevailed both in Scotland and England. To his mind it was beyond all doubt that what the Legislature intended was to sweep away all these private arbitrations which the parties had themselves agreed upon and to determine that there should be one uniform form of procedure.

In *Brown v. Mitchell* (1910 S.C., 369) it had been

provided in a lease of a farm that the compensation payable to the tenant should be according to the rates specified in a schedule annexed to the lease, and that compensation at these rates should be held as substituted for the compensation under the Agricultural Holdings Act, 1908. Heads I., II., and III., of the Schedule provided for the compensation payable for certain specified artificial manures at rates varying according to the year of application. Heads IV. and V. were as follows: "IV. Other artificial manures. Exhausted by first crop—no compensation. V. Feeding stuffs. For linseed, cotton and rape cakes, or for other purchased substances of equal manurial value, consumed on the farm by cattle and sheep and pigs during the last year of the lease, one-third of the value thereof. If consumed on permanent pasture, three-sixths of the value thereof, if applied in the last year, two-sixths if in second last year, and one-sixth if in third last year. Exhausted in four years." In a note appended to the Schedule it was provided "From the amount to be paid in compensation for the unexhausted manurial value of feeding-stuffs the arbiters shall deduct any sum which, in their opinion, has been or should be paid to the tenant on account of any increased award, by reason of the manurial value of the feeding-stuff consumed, put upon the dung left by the tenant." In a claim by the tenant at the expiry of the lease for compensation for unexhausted manures (in which the rate of compensation provided by the Schedule was not challenged as unfair or unreasonable) it was held first that the Schedule should be read as a whole, and that so read Head IV. was not void under Section 5 of the Agricultural Holdings Act, 1908 (which avoids contracts depriving a tenant of his right to compensation), but validly precluded the tenant from claiming compensation for "other artificial manures," which had grown a crop; secondly that "value" in Head V. meant original or manurial value, *i.e.*, the value of the manurial constituents of the feeding stuffs before they were consumed; thirdly that the tenant was validly precluded from claiming compensation for feeding stuffs of the character specified in Head V., which were consumed on the holding (exclusive of the permanent pasture) prior to the last year of the lease; fourthly that the tenant was entitled to compensation in respect of the consumption on the holding of feeding stuffs, the manurial residuum of which entered the farmyard manure left unapplied to the land by the tenant at outgoing, but subject to deduction of such sum as might be found deductible under the provisions of the note appended to the schedule.

The tenant in the same case had made a claim for compensation for "unreasonable disturbance," under Section 10 of the

Scottish Act (corresponding with Section 11 of the English Act), under which a question arose whether the onus of showing that the tenancy was terminated by the landlord "without good and sufficient cause and for reasons inconsistent with good estate management," lay on the landlord or tenant. In dealing with this important point the Lord President said: "I think one thing is clear: first of all, that the tenant must, if I may so phrase it, open the ball by saying that the landlord has, without good and sufficient cause, terminated the tenancy. But if he says so, and if he says, 'I know no reason whatever why I am being turned out, and therefore I presume it is without good and sufficient cause, and for reasons inconsistent with good estate management,' it seems to me that he has done all he could do. . . . It seems to me that the moment the tenant has said what I have said that it rests with the landlord to make the next move, and it is then for the landlord to show that there is some reason for which he has parted with the tenant." Further on he adds, "What reasons are capricious and what reasons are not capricious no man would try to define, because really no one could possibly *ab ante* figure all the possible reasons for which a landlord might wish to get rid of a tenant. But of this I am quite sure . . . there may be perfectly good reasons for getting rid of a tenant which are not in the strict sense of the word agricultural reasons, and a landlord who gets rid of a tenant for one of these reasons, being a good one, is not liable under this clause. . . . An agricultural reason would of course be that the tenant is a bad farmer. But there are many other classes of reasons. For instance, there is the reason that the rent is too low, and that the tenant will not give any more. That would be a perfectly good reason. Whether you could prove that was so or not would depend upon different circumstances, and the best proof would be an offer from somebody else at a largely increased rent. . . . Good estate management means getting as much as your property is worth . . . the real object of the clause is not to give fixity of tenure, but to provide for compensation if there has been capricious action on the part of the landlord in refusing to renew the lease."

In a County Court case of *Clewlow v. Briscoe* (129 L. T., 450), on the same section, H.H. Judge Harris Lea held that where a landlord died and his executors, in pursuance of a trust for sale, put up his land to auction, and with a view to the sale gave notice to quit to the tenant the tenancy had not been terminated "without good and sufficient cause," and therefore that the tenant was not entitled to compensation for unreasonable disturbance.

4. *Ground Game*. In *May v. Waters* (1910, 1 K.B., 431; 79 L.J.K.B., 250) it was held that Section 6 of the Ground

Game Act, 1880, which forbids a person having the right of killing ground game under the Act, for the purpose of killing ground game to employ spring traps except in rabbit holes, does not apply to the grantee of sporting rights over land when he is not the occupier of the land over which those rights are granted. On the other hand in *Waters v. Phillips* (1910, 2 K.B., 465; 79 L.J.K.B., 1062) it was held that the section does apply to the occupier of land who has the right apart from the Ground Game Act, 1880, of killing and taking game on the land by reason of the fact that the owner has not by the tenancy agreement reserved the sporting rights. The reason of the different decisions appears to be that the occupier is expressly made subject to Section 6 by Section 1 of the Act.

5. *Produce.* *Draper v. Newnham* (102 L.T., 280; 8, L.G.R., 144) was a case where a retail milk dealer was summoned for selling milk not of the substance and quality demanded. He relied on a warranty under the Sale of Food and Drugs Act, 1875, and proved that he had purchased the milk from a farmer who for some years had supplied all the milk he required under a verbal contract, and that in September, 1908, the farmer had written, "I hereby guarantee and warrant that all milk supplied by me to you is of the nature, quality, and substance demanded by law, and I give this warranty for the purpose of the Sale of Food and Drugs Act, 1899." It was held that this warranty could be read as meaning that it should apply to all future deliveries of milk, and that the respondent was protected thereby under Section 25 of the Sale of Food and Drugs Act, 1875.

Wallis v. Pratt (1910, 2 K.B., 1003; 79 L.J.K.B., 1013), was a case of the sale of sainfoin seed which turned out to be giant sainfoin and not English sainfoin. It was sold by sample by the appellants to the respondents, and was said to have been grown by Walker of Tanfield, near Alverstoke. The sold note was as follows: "Sold to Messrs. Wallis, Son and Wells, Reading, on the conditions printed on the back, abt. 27½ quarters sainfoin 40s. × Walker (common English) × Alverstoke" On the back was the following condition: "Sellers give no warranty, express or implied, as to growth, description, or any other matters, and they shall not be held to guarantee or warrant the fitness for any particular purpose of any grain, seed, flour, cake, or any other article sold by them, or its freedom from injurious quality, or from latent defect." The seed was duly delivered and was equal to sample. The respondents re-sold a portion of the seed as common English sainfoin seed in different parcels to several purchasers including one J. R. Nichol. After the seed came up he discovered it was not common English sainfoin but giant sainfoin, which was inferior in quality to the

English, lasting only about three, instead of six, seven, or eight years. He claimed damages from the respondents for breach of warranty, which was settled by them, after due notice to the appellants, for 14*l*. Other similar claims had been made and had already been or were in course of being settled by them. The respondents claimed the sum of 14*l*. from the appellants. Judgment was given in favour of the respondents and the appellants appealed. In the Court of Appeal this judgment was reversed, it being held that inasmuch as the respondents had by re-selling the seed put it out of their power to reject it and return it to the appellants on the ground that the condition that it should be English sainfoin had not been fulfilled, and as the property in the seed had, under Section 11, Sub-section 1 (c) of the Sale of Goods Act, 1893, passed to the respondents as purchasers, the condition ceased to operate as a condition, and a breach thereof could only be treated as a breach of warranty, in respect of which the respondents were not entitled to recover, their remedy in respect of breach of warranty being barred by the clause on the back of the note. The respondents were therefore unable to recover the loss they had sustained. It should be noted that there was no question of fraud or unfair dealing in the case, the seeds being said to be almost undistinguishable by examination, and the only real question was the construction of the contract of sale.

6. *Miscellaneous.* Under this head may be noted the case of *Hoddell v. Parker* (1910, 2 K.B., 323; 79 L.J.K.B., 759), where the question arose as to whether an engine had been used for "agricultural purposes" only. The Locomotives Act, 1898, Section 9, requires locomotives used on any highway in a county to be licensed by the County Council, with an exception in favour of "any agricultural locomotive" and "any locomotive not used for haulage purposes." "Agricultural locomotive" is defined in Section 17 as including "any locomotive used solely for threshing, ploughing, or any other agricultural purpose." Messrs. Hoddell, who owned a threshing engine, let it to a farmer under a contract to thresh and haul wheat to a certain mill. The engine was used in hauling the wheat after it was threshed to a mill in the county of Monmouth to be ground. It was held that the use of the engine in the hauling of corn to market to be sold or to a mill was not an "agricultural purpose" within the meaning of Section 17 of the Locomotives Act, 1898, and therefore that Messrs. Hoddell were not exempt from the necessity of obtaining a licence and paying the usual fee.

AUBREY J. SPENCER.

THE MEAT INDUSTRY IN ITS RELATION TO AGRICULTURE IN THE UNITED KINGDOM.

BY LOUDON M. DOUGLAS, F.R.S.E.,

*Lecturer and Technical Adviser on Bacon Curing, the
Meat Industry, and Modern Dairy Practice.*

THE year 1910 will be memorable in connection with the meat industry of Europe, because of its having witnessed such a crisis in the history of the meat supply as is likely to have far-reaching results. During last year it began to be realised in some of the larger European states that the home supplies of meat of all kinds were not keeping pace with the increase in the population, and as meats from other countries and from the British colonies were refused entry into these states, the home prices became consequently higher and higher. Agitation has now gone so far that it is most likely that Germany, Austria, Hungary, Switzerland, France, and Italy will be compelled to open their frontiers to supplies of foreign meat. In Portugal, the prohibitions have already been removed, with the result that in that country the prices of meat have fallen to their normal level.

This meat famine in Europe is likely to have a considerable influence on the meat supply of the United Kingdom, with which we are here more immediately concerned, as it is quite obvious that if the imports from foreign countries to British ports diminish, the total supply to the United Kingdom will, in consequence, be curtailed, and any such developments should be keenly watched by all who are interested in the progress of British agriculture.

SOME STATISTICS.

In order to fully appreciate the trend of events, it will be of interest to consider the supplies dealt with at our greatest meat distributing centre, namely, Smithfield Markets, London. An analysis of the supplies of various kinds of meat to that emporium during 1910 shows the following figures¹ :—

¹ Annual Report for 1910.

Analysis of Supplies, 1910.

Source of supply	Beef and veal	Mutton and lamb	Pork	Poultry, game, rabbits	Totals	Ratio per cent
	Tons	Tons	Tons	Tons	Tons	
The United Kingdom .	40,241	33,715	8,520	12,021	94,497	22·5
Australasia	20,434	80,828	191	4 279	105,732	25 2
Canada and United States	43,696	67	136	304	44 203	10 5
South America . . .	100,830	21,457	5	53	122,345	29·2
Holland and other countries	10,920	9,300	22,555	9,994	52,773	12·6
	216,121	145,367	31,407	26,655	419,550	100·0

These figures indicate that only 22·5 per cent. of the total supplies are derived from the United Kingdom. This is the lowest figure on record, and it is quite in conformity with the gradual decline in the supply of British meats to the Metropolitan area of London, which has been taking place during the last thirty years. In fact it would appear that at the present day, four out of every five tons of meat dealt with at Smithfield Markets are imported. It would therefore seem, from the evidence of these actual figures, that the British stock producer is gradually being eliminated so far as our principal market is concerned.

The general relationship, however, existing between the imported meats and the home supply which maintains at Smithfield Market, is not borne out throughout the United Kingdom, as may be gleaned from the brief summary, on page 138, of the figures for beef, mutton, and lamb, showing the total estimated weight available for consumption in the United Kingdom during the last three years.¹

These figures show the enormous extent to which we have carried the importation of foreign meats, and it is quite evident that, so far as can be at present seen, such supplies are likely to be largely increased, notably from Argentina.

ARGENTINA.

In the early history of the Argentine Republic, it is recorded that the first prize sheep imported to that country was a South-down, which was sent out there in 1825. In 1844 the first Shorthorn bull was taken out, and, working from these small beginnings, the first shipment of frozen meat was sent from Argentina to England in 1876.

At the present day the quantities of meat products coming from that country are simply enormous, 72 per cent. of

¹ Weddel & Coy's Review for 1910.

138 *The Meat Industry in its Relation to Agriculture.*

all the fresh meat we import being derived from that source as well as 28 per cent. of the frozen mutton.¹ Such expansion as has taken place in Argentina belongs to the romance of the meat industry, and it would seem quite fair to say that the producers there can send us at least ten

	1910	1909	1908
	Tons	Tons	Tons
<i>Home-grown—</i>			
Beef	787,860	787,500	786,000
Mutton and lamb	333,900	341,100	334,900
Total	1 121 760	1,128,600	1,120,900
<i>Foreign Live Stock—</i>			
Beef	70 373	103,288	123,150
Mutton and lamb	11	218	2,110
Total	70,584	103,506	125,260
<i>Fresh Killed, &c.—</i>			
Beef	2,885	3,217	755
Mutton and lamb	7,221	9,674	14,430
Total	10,106	12,891	15,185
<i>Chilled—</i>			
Beef	159,828	134,850	135,879
Mutton	44	16	194
Total	159,872	134,866	136,073
<i>Frozen—</i>			
Beef	188 062	168,985	144,965
Mutton and lamb	263,036	226,402	204,938
Total	451 098	397,390	349,903
Total of beef	1 209 208	1 197,843	1 190,749
Total of mutton and lamb	604,212	579,410	556,572
Grand total	1,813,420	1,777 253	1,747,321

times as much as the present output, and it remains to be seen whether the new situation which is being created in Europe will tend to more rapid expansion of the trade than has hitherto taken place. It is a question which affects the British farmer to the extent that it is becoming a more and more difficult task for any agriculturist in the United Kingdom to compete against the better climate and other favourable conditions of South America.

¹ *Argentina Past and Present*, by W. H. Koebel. *Argentina*, by W. H. Hurst.

While, however, this great increase from Argentina has to be placed on record, it must not be forgotten that, apparently owing to the economic changes in North America, and particularly in the United States, the large exports of meats from that part of the world to the United Kingdom are gradually dwindling, and it is within the region of possibility that in a few years' time the United States will cease to export meat of any kind, as it will all be required for home consumption.

NEW SOURCES OF SUPPLY.

The general tendency of the facts which have been noted has been to instigate agriculturists in foreign countries to put themselves in a position to supply meat to the British markets, as the prices which have ruled, and are ruling, in the United Kingdom are highly remunerative. It is therefore not altogether astonishing that from South Africa and from some of the Australian Colonies, which have hitherto not supplied any great quantity of meat to the United Kingdom, there are reports of great expansion in freezing works such as are necessary to the proper carrying on of an export meat business.

Nearer home, an interesting development has taken place in Ireland, where works for the supplying of meat to London and Manchester markets are in course of construction. These works are being installed at Wexford and Drogheda, and have been decided upon as the result of experiments which have shown that it is quite possible to conduct such a dead meat trade at prices remunerative to the Irish promoters. Should the industry develop largely, it is quite evident that it will have a highly beneficial effect in Ireland, but will seriously injure the cattle feeding industry of Great Britain.

STORE CATTLE TRADE.

The conditions of agriculture in the greater part of Great Britain are such that it is difficult for farmers to breed cattle for feeding purposes at a profit. Farming expenses are so great that the industry of rearing young cattle does not pay, hence the necessity for a store cattle trade with Ireland, where working expenses are so much less and the consequent price of store cattle so much lower than it can possibly be in Great Britain. Such cattle are exported from Ireland at the age of from six months up to a year or eighteen months, and they are distributed over various markets, notably in the Lowlands of Scotland and the North of England, where the business of feeding store cattle so purchased is extensively carried on.

The dimensions of this industry may be gauged from the fact that the numbers of cattle shipped alive out of Ireland,

and consisting to a large extent of stores, were 837,426 in 1909, while the general average for the three years 1907-8-9 was over 800,000. Such a large supply has set up conditions which have been, so far, very favourable to the British agriculturist. It is obvious, however, that if the new developments in Ireland succeed this supply will dwindle in proportion and the British feeder will then have to fall back on his own resources in connection with this branch of agriculture.

Notwithstanding all the huge imports of foreign meats, there has been an increased demand throughout the United Kingdom for prime quality of fresh meat, and, as will be seen by a casual study of the market reports, the home-grown article of this class has reached the highest price on record. The carcass price for beef at one time of the year 1910 was about 8*d.* per lb., as compared with a general average of about 6*d.*, but the supplies were not available, nor is there any indication that an increased number of fat cattle will be forthcoming in the future. The latest returns, indeed, show that there is a considerable shortage. The supply of first-class mutton also has been far short of the general demand, and, as a consequence, store sheep at the end of 1910 were very dear and in great demand, owing to the open winter and the plentiful crop of turnips.

THE FEEDING OF STORE CATTLE.

Store cattle are now largely bought by weight, more especially in the North of England and Scotland, and, owing to the provision of live stock weighing scales at the various markets, the risk of loss through bad judgment is very considerably diminished. It is to the farmer's interest to always take advantage of the accurate system of selling provided by the live-weight scales, and his true policy is to discourage altogether the selling of live stock by hand. The prices are at present fixed by the hundredweight, live weight, and so it is possible to institute a comparison between the present and former years. Thus, in 1909, prime bullocks which were six quarters old averaged from 30*s.* to 35*s.* per cwt., whereas during 1910 the same quality fetched about 38*s.* per cwt. ; the second class of bullock fetching from 30*s.* to 35*s.* Well-bred animals in good condition always fetch the top price, and young ones especially, which are in such condition, are much in demand, it being quite obvious that the good-conditioned animal will take on feed better and thus be in a position to return its cost to the feeder much sooner than one which is not in good condition. Animals that are capable of being matured early are what the stock feeder really wants. It is the custom, therefore, for farmers who buy store cattle to purchase in September and October,

such animals as may have been born in the spring of the year, and keep them until they are about two years old, but there is no hard and fast rule in this matter, as it is quite obvious that the supply of food will be the most important factor. A bullock of thirty months old may be looked upon as fully matured and ready for market, and beyond that age it is doubtful if it pays for its feed. The regulation of the output is also of great importance, and the careful feeder will arrange that he is able to draw from his stock, periodically, a certain number of marketable animals, sending such to market, say, once in every two or four weeks. By this system it is possible that he may encounter some losses, but it is also reasonable to suppose that he will participate in the gains when the markets are good and will thus be able to average out good prices. The whole business is one of feeding cattle and sheep for food purposes, and the farmers must therefore endeavour to please the meat purveyors who handle the animals finally before they are converted into food.

BREEDS OF CATTLE.

So far we have spoken of cattle in general, but we have not forgotten that those which are bred in the United Kingdom belong to different breeds which have been improved upon by careful selection. There are about twenty-three well-recognised types in this country, and all of these are represented by different breed societies, whose object is to maintain them in their pure condition. Unfortunately, these types do not all conform to the requirements of the meat purveyor, and it seems unfortunate that the breeders should have taken so little advantage of the experience of such men. The Smithfield Club, which may be taken as the principal live stock society in the United Kingdom, has been in existence since 1799, and it sets forth as its principal object the encouragement of "the selection and breeding of the best and most useful animals for the production of meat." Strange as it may appear, however, the actual carcass competitions in connection with the Smithfield Show, held annually in London, were only instituted in 1895 as the result of the agitation by meat purveyors, who pointed out that the great mountains of fat which were exhibited at the Smithfield and other live stock shows throughout the country, were not what they wanted, masses of fat being altogether waste products so far as they were concerned. Since then, a marked difference has taken place in the types of animals exhibited, and the tendency is towards making the exhibit of live stock conform to the meat purveyors' requirements. Breeders' points still prevail at the Smithfield Show and similar exhibitions, and how utterly useless these

are to the man who deals in meat has been demonstrated year by year since the carcass class was instituted. Briefly stated, this class is composed of bullocks, sheep, and swine, which are judged on the hoof, and then slaughtered and judged as meat during the course of the Show.

At every one of the Smithfield Shows the awards given by the Judges to the live animals have not been sustained by the Judges of the carcasses, showing that the agriculturist has still but a limited knowledge of what the meat purveyor actually wants, and which may to a large extent be rectified by placing a meat purveyor on the judging committee of the live stock. It is quite safe to say that a competent meat purveyor would be a better judge of a live carcass than an agriculturist, and in this connection it may be mentioned that the judging of all animals should be reduced to standards of excellence which can be translated into figures. This has already been done in connection with the carcasses, and an example of the type of the standards wanted, and such as have been arrived at, may be given here :—¹

Standard of Excellence for Judging the Carcass of a Bullock.

1.	Workmanship and handling of carcass	5
2.	Colour and general appearance of carcass	10
3.	Conformation of carcass and proportion of meat to bone	10
4.	Proportion of meat on hind-quarter and roasting parts	15
5.	Thickness of sirloin	20
6.	Conformation of fore-quarter, embracing fleshy spare-rib and shoulder, proportion of meat to bone	10
7.	Thickness and fleshiness of brisket or breast	5
8.	Smallness of neck	5
On quartering the carcass, the following points to be noted :—		
9.	Colour and texture of flesh	10
10.	Marbling of flesh	10
Total		100

Standard of Excellence for Judging a Carcass of Pork.

1.	Dressing of carcass	5
2.	General appearance and firmness of flesh and fat	10
3.	Proportion of meat to bone	15
On splitting the carcass into halves, the following points are to be noted :—		
4.	Plumpness of legs	20
5.	Thickness of loin and smallness of proportion of fat to lean	20
6.	Streakiness of belly part	10
7.	Fleshiness of fore-quarter	15
8.	Smallness of head	5
Total		100

¹ *The Meat Industry and Meat Inspection*, by Leighton & Douglas, Vol. II.

The Meat Industry in its Relation to Agriculture. 143

Standard of Excellence for Judging Carcasses of Mutton and Lamb

1. Dressing of carcass	10
2. Colour, general appearance of carcasses, and firmness of fat	10
3. Proportion of meat to bone	15
On splitting the carcass and dividing it transversely, the following points are to be noted -	
4. Colour, texture, and thickness	10
5. Plumpness of legs of mutton	20
6. "Eye" of the chops and thickness of loin	25
7. Fleshiness of fore-quarters	10
Total	100

In fixing such standards it must be borne in mind that meat may vary very much in quality, and that this is principally due to the different percentages of water, protein¹, fat, and ash present, all these constituents varying in different portions of the carcass. The quantity of water present, for example, ranges from 48 per cent. in the side to 75 per cent. in the round. The new study, therefore, in connection with the qualities of meat should be based, first of all, upon their chemical constituents and food values, and the points should be determined by the amount of meat of high nutritious value, and not upon any basis of the amount of fat. This is a highly technical question which has not been studied at all systematically in the United Kingdom, and it would be of great advantage to agriculturists if the whole matter were investigated and placed upon a scientific basis, so that the existing rule-of-thumb practice might be entirely abolished.

DIFFERENT CLASSES OF CATTLE.

As has been mentioned, there are some twenty-three different types or breeds of cattle in the United Kingdom, and in the different European countries the total number of breeds is about 150. It is a notable fact, however, that what are known as pure-bred animals are not generally suitable for the meat purveyor's purposes. There have been attempts made to arrive at the dual-purpose cow, but these have not succeeded very well, and it seems to have been established that an ordinary cross-bred animal adapts itself more easily to meat purveyors' uses than does any other. In the meat industry, dairy cattle have to be dealt with, and owing to the fact that it is difficult to fatten them in anything like the same way as ordinary cross-bred animals, the prices they realise are correspondingly less, and the quality of the meat is often of an inferior order.

¹ The protein is arrived at by multiplying the nitrogen by 6.25

THE INSURANCE OF ANIMALS.

The above considerations lead us to say that there is considerable variety amongst the classes of stock marketed, and for many years there has been constant warfare between the organised meat purveyors and the farmers, with regard to the liability for diseased animals. It will be remembered that there are three different classes of people who are concerned in the meat supply. The first is the farmer, the second the meat purveyor, and the third the consumer. The farmer is required to breed stock which is free from disease, as, undoubtedly, the meat purveyor must look to the farmer to produce animals that are fit for human food, and it is on this understanding that live stock is marketed and purchased. Unfortunately, however, there are many tuberculous animals in our herds, it being stated that, amongst cows, 40 per cent. are affected with tuberculosis, and, amongst bullocks, 20 per cent. are said to be affected in the same way, whereas something like two per cent. of the cows are said to have tuberculosis of the udder. If these figures are even approximately correct, we are bound to assume that they constitute a menace to the welfare of the community. The farmer has in the tuberculin test a means of ascertaining whether his cattle are affected or not, and it is further a question whether the State should not step in, and, in the interests of the community, systematically test all the herds throughout the country, and proceed to gradually eliminate those that are tuberculous. No doubt, this would be a heroic remedy, as the cost would be enormous. If, however, we are to accept the conclusions of the Royal Commission, appointed to inquire into the tuberculosis question in 1901, it is only right, in the public interest, that such cattle should be discovered and slaughtered. Whether this is, or is not, a possible policy, is not material to the question as between the farmer and the meat purveyor. The latter, who purchases farm live stock, has no means of knowing whether the cattle are affected with tuberculosis or not until they are slaughtered, and it seems to be only fair that, under such conditions, the farmer should be liable to indemnify the meat purveyor. This question has been agitated for a good many years, and, mainly through the instrumentality of the Meat Traders' Associations, an understanding has been established between the farmers and meat purveyors, to mutually insure the animals offered at the market: the condition of insurance being that, in the case of bullocks over 10*l.* in value, the farmer pays 6*d.*, while an equal amount is paid by the meat purveyor. In the case of cows, the insurance premium is 2*s.* 6*d.*, and for bulls it is 1*s.* per head. In some markets, the recompense for cows which are found to be tuberculous is only two-thirds of the value, but

usually the full value is allowed. Such an equitable arrangement has been carried out in a great many different places throughout the United Kingdom, and there is every possibility that it will become universal. It does not, however, get rid of the question of tuberculous meat, which is another consideration altogether, and which is a problem for the Government to deal with. It can be seen that the consumer's position is undoubtedly a very serious one, when the question of diseased meat is considered. Meat purveyors, as a class, have no means of acquiring technical education in connection with their business, and, as a consequence, wholly unscientific and even dangerous conditions prevail with regard to the conduct of the meat industry. Epidemics of ptomaine poisoning have arisen from time to time, and they have been due to quite preventible causes, which, however, cannot be said to be appreciated by the average meat purveyor. It is time, therefore, that instruction in connection with the meat industry should be placed upon the same level as instruction in butter-making, which can be got at each of the twenty-two agricultural colleges which exist in the United Kingdom, but where instruction in connection with the much more complex meat industry is entirely wanting.

BY-PRODUCTS.

That scientific education in the meat industry of the United Kingdom is necessary may be inferred if we consider for a moment what is happening in foreign countries. In Chicago, Argentina, and Australasia, packing houses exist where cattle, sheep, and pigs are handled in vast quantities, and where it is possible to aggregate large quantities of by-products. These are utilised in every possible way, so as to produce specific articles which are largely used in the arts and manufactures. In an ordinary packing house there are about a hundred different products made from a slaughtered bullock, and thus the scientific method of handling the animal results in a very much increased gross value. In the United Kingdom no such scientific practice exists, and the by-products which are utilised here are few in number. They consist, for the most part, of the blood, hide, hoof, and spur, the intestines, lungs, heart, stomach, and liver. No attempt is made in this country to produce the finer products such as oleo, glue, gelatine, pharmaceutical preparations, and fertilisers, which bulk so largely in the properly designed modern packing house. This points to the fact that we are much handicapped in this country when competing with foreign nations, and it is therefore evident that, if the home meat industry is to be conducted at a profit in the future, in the face of such enormous competition as has been

indicated, it will be necessary to concentrate the handling and slaughtering of animals to a greater extent at various centres, so that the residual products may be handled to advantage. Such a view might commend itself to modern farmers and also to small-holders, and might be capable of giving rise to some national scheme which would permanently benefit agriculture.

MEATS ON THE FARM.

There has been some development in the direction of handling meats on the farm, and it is not unlikely that this may develop further in the future, as there seems such a ready sale for all fresh meats when properly handled, even in small quantities. There is also the increased advantage that cured meats can be thus produced as a legitimate development of this auxiliary branch of the farmer's business. Time was, when the curing of meats on the farm formed a staple industry in some of the counties in the Lowlands of Scotland and the north of England, and there are not wanting indications that this pursuit is likely to be revived in the curing of hams and bacon, and, further, that the farm will undertake the handling of fresh meats, such as beef and mutton, and the utilisation of the carcasses to their full extent, thus making a good use of the residual products, which, at the present moment, do not command a ready sale in the open market.

REFRIGERATION.

It must not be forgotten that all the developments which have taken place in the over-seas meat industry have been primarily due to the introduction of refrigerating machinery, which has enabled cargoes of fresh meat to be brought from distant countries in a perfect condition. Refrigeration also plays an important part in all home supplies, and it is not unlikely that should the handling of meats on the farm be developed in the future, it will be found necessary to adopt, as a part of the farm stock-in-trade, some kind of cooling apparatus which will enable fresh and cured meats to be handled in a hygienic and a safe way, the same apparatus being utilised for maintaining butter and poultry in a fresh condition. It is by progress along some such lines as these that there seems considerable hope for the future of British farming, as it is quite evident that it will be necessary to develop in some direction in which there is a likelihood of increasing the profits.

GENERAL OUTLOOK.

As we have seen, the British meat trade is entirely subservient to the meat trade created by foreign nations and by

the British Colonies, and there is every indication that the supplies of meat from abroad will continue to increase, so that the future does not seem to be very reassuring from the farmers' point of view. It is possible that the remedy is to be found in some form of combination, such as co-operation, as by such means it would be possible to collect large quantities of live stock into different centres where they could be slaughtered for food, and where the residual products could be treated in a scientific manner. That is a question which is now ripe for discussion, and it is highly probable that the organisation of such combinations of the farming community would be the first step towards placing British agriculture on a more profitable basis than it has ever been before.

LOVDON M. DOUGLAS.

3 Lauder Road,
Edinburgh.

THE LIVERPOOL SHOW, 1910.

THE third visit of the Society to Liverpool proved to be, as on the previous occasions, of a most enjoyable character. All that could be done to make the Show a success was carried out by the Local Committee under the chairmanship of the Lord Mayor, who was untiring in his efforts to meet all the Society's requirements. The City of Liverpool and Counties of Lancaster and Chester united in giving the Society a warm and hospitable welcome, and it is satisfactory to record that, notwithstanding the adverse character of the weather, the Show of 1910 was in all respects a great success.

The following table gives particulars of the results of the three Shows which have now been held in Liverpool :—

Year	Where held	President	Implements entered	Entries of live stock	Number of persons admitted	+ = Profit - = Loss
1841	Falkner's Fields.	Mr. Philip Pusey	312	234	Norecord	£ 2,186
1877	Newsham Park.	Lord Skelmersdale	6,980	1,282	133,354	+ 3,947
1910	Wavertree Playground.	Sir Gilbert Greenall, Bart.	4,856	2,787	137,812	+ 5,482

As indicating the progress of the Society's annual Show, it may be noted that in 1841 the Show occupied seven acres, in 1877 seventy-five acres, and in 1910, 108 acres. The late Earl Egerton of Tatton (then the Hon. Wilbraham Egerton), in his report as Senior Steward of the 1877 Show, refers to the fact that it was at the 1841 Show that Implements first

had any special recognition, "and they filled two rows of sheds." At Liverpool, in 1877, a trial of Automatic Sheaf Binders was held, but the Gold Medal offered was not awarded, as none of the machines entered were considered to be adapted for an English crop.

In view of the visit of the national Society to Lancashire, the usual annual show of the Royal Lancashire Agricultural Society was not held in 1910, the county organisation co-operating with the "Royal" by undertaking, through its catering committee, the refreshment arrangements in the Showyard. They also very kindly placed at this Society's disposal several challenge cups for competition, and these were duly awarded at the Show.

The Society was fortunate in having had placed at its disposal by the donor and trustees the extensive open space known as Wavertree Playground, which proved to be an ideal site. The shape of the ground permitted the several sections of the Show to be laid out with exceptional uniformity, and enabled visitors to inspect the whole of the exhibits with the minimum of trouble.

The Playground needed little of the preparation generally found necessary to adapt a piece of ground to the requirements of a "Royal" showground, it being well turfed, drained, levelled, and enclosed by substantial iron railings. Two public entrances were erected, one at the Sefton Park end in Smith-down Road, and the other at the Picton Road end, facing Grange Terrace. A well-laid road through the ground connected the two entrances.

Under the conditions attaching to the gift of the ground to the City, it was only possible to close the Playground for seven days, consequently the work of erecting the show buildings, occupying several months, had to be carried out in the presence of the public; but, owing to the goodwill of the inhabitants of Wavertree and the surrounding district, no material disadvantage was experienced. On the Saturday before the Show opened, previous to closing the ground that evening, the Yard presented an appearance similar to that of a good shilling day, there being several thousands of people walking about the various avenues. The ground was closed to the public on the evening of June 18, thus allowing two clear days (Sunday and Monday) before the commencement of the Show on Tuesday, June 21. The Show concluded on Saturday, June 25, and the public again had free access to the ground on the following day (Sunday). With the exception of the way through the ground, however, the Implement section was enclosed by chestnut fencing for a further few days until the exhibits in that section had been cleared.

Ample means were available for reaching the Show from Lime Street and the other principal stations in Liverpool by motor cab, electric tram or by train, the Sefton Park Station of the London and North Western Railway being immediately opposite the principal entrance in Smithdown Road.

On the night of Monday, June 13, a fire broke out in the Surveyor's office, resulting in the entire destruction of the Pavilion, which contained the offices of the Honorary Director and Stewards, besides the Surveyor's quarters. Apart from the burning of the Pavilion, no great damage was done, and, fortunately, it was possible to have a new temporary building erected before the opening of the Show in the following week.

Fine weather prevailed throughout the opening day, Tuesday, June 21. The veterinary examination of horses began at an early hour, and was completed before the judges commenced their duties at 9 a.m. All the Cattle, Sheep, and Pigs, and most of the Horses were judged on this day, and it was not until a late hour that the last of the awards was made.

Early in the year it had been announced that Their Royal Highnesses the Prince and Princess of Wales had graciously accepted the invitation of the Lord Mayor and Corporation of Liverpool to be the guests of the City on the evening of June 21, and that Their Royal Highnesses would visit the Show on the following day. The lamented death of King Edward unfortunately prevented the proposed visit: but His Majesty King George, although unable, personally, to go to Liverpool, sent H.R.H. Prince Arthur of Connaught as His Majesty's deputy.

His Royal Highness arrived at Lime Street Station from London at 12.30 p.m. on the Wednesday, and, after receiving a Civic Address in the London and North Western Railway Hotel, proceeded to the Showground, reaching the Smithdown Road entrance a little after one o'clock. The Royal party entered the Showyard by the Smithdown Road entrance, and proceeded to the Royal Pavilion, where the President and Members of Council were waiting to receive His Royal Highness. Having inspected a Guard of Honour of the Boys' Brigade, Prince Arthur drove to the Horticultural Exhibition, and inspected the exhibits. His Royal Highness then proceeded to the Large Ring, and was driven round, a large number of cattle being parked in the centre for the inspection of the Royal visitor. Returning to the Pavilion, Prince Arthur honoured the President with his company at luncheon, the party consisting of the Lord Mayor of Liverpool and other local dignitaries, and members of Council.

After luncheon, the Royal party were driven to the Royal Box in the Grand Stand, where they remained until four o'clock

witnessing the various events in the Large Ring. An exciting incident occurred in the Ring when the Four in-Hand teams were being judged; the team exhibited by Mr. John W. Harvie got out of hand and dashed towards the Grand Stand. Mr. Gilman, the guard of the coach exhibited by Mr. Edward H. Brown, undoubtedly averted a most serious accident by stopping the horses. His action was of such a meritorious and plucky character that, on the suggestion of the Honorary Director, Sir Gilbert Greenall, a handsome silver cup, suitably inscribed, was publicly presented to Mr. Gilman by Lady Greenall in the Large Ring on the last day of the Show.

There were, unfortunately, frequent showers throughout the Wednesday, especially during the time that Prince Arthur was in the Showyard.

On Thursday Prince Arthur paid a private visit to the Show in the morning, in order to inspect the exhibits in the Implement Section. After lunching in the Royal Pavilion, His Royal Highness left the Show, walking to the Sefton Park Station, opposite the main entrance, where he joined the 2 o'clock London express, on which a special saloon had been placed for His Royal Highness.

At the General Meeting of Governors and Members, held in the large tent, the awards in the Farm Prize Competition were announced, and votes of thanks to the Lord Mayor, Corporation, Local Committee, and Railway Companies were enthusiastically passed. A full report of the proceedings at this meeting appears at page xxviii. of the Appendix.

Fine weather prevailed throughout the day, and the number of persons admitted by payment reached 30,193, a total which has only twice been exceeded on a half-crown day—at Manchester, in 1869, and at Windsor, in 1889.

On the Friday, the first shilling day, the rain was again in evidence, with a few intervals of fine weather. During the night, however, there was a further downpour, causing considerable discomfort in the live stock section of the Yard.

The last day (Saturday) opened dull, rain commencing to fall about 9 a.m., and continuing intermittently until the close of the Show. The great feature of the day was the parade of 200 draught horses in gears, which is described in detail on page 154. In the afternoon, the medals and prizes provided by Mr. J. W. Paton, in connection with the competition for essays and drawings, were presented by the Lady Mayoress to the school children who had been successful in the competition. The entries numbered in all upwards of 8,000, and selected essays and drawings were on view during the week in a special building in the Showyard.

On the first three days, the band of the Liverpool City Police performed selections of music in the Band Stand, their place being taken on the last two days by the Black Dike Band.

The following statements give (1) the number of visitors admitted by payment at different times on each day of the last Show, and (2) the total daily admissions on each day at the last seven Shows and the Liverpool Show of 1877.

(1) *Admissions by Payment at Liverpool, 1910.*

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	Day's total
Tuesday (5s.)	1,039	1,753	2,253	2,467	2,492	2,492
Wednesday (2s. 6d.)	5,739	11,960	18,146	19,397	19,637	19,646
Thursday (2s. 6d.)	7,678	18,939	27,434	29,762	30,186	30,193
Friday (1s.)	9,604	20,421	33,972	41,918	44,215	44,327
Saturday (1s.)	8,851	15,992	31,314	39,801	41,101	41,154
Total Admissions						137,812

(2) *Total daily admissions at the recent Show, compared with the previous six Shows and the previous Liverpool Show in 1877.*

Prices of Admission	Liverpool 1910	Gloucester, 1909	Newcastle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Park Royal, 1904	Liverpool, 1877
Five Shillings (Implement Yard only)	—	—	—	—	—	—	—	114
Five Shillings (Implement Yard only)	—	—	—	—	—	—	—	264
Five Shillings	2,492	1,492	2,397	1,690	2,752	—	2,011	6,673
Half-crown	10,046	20,010	32,142	22,935	25,066	2,770	9,375	25,074
Half-crown	31,103	15,452	28,880	23,735	—	7,684	10,912	22,081
One Shilling	44,327	30,281	98,489	51,888	46,055	7,754	14,175	51,313
One Shilling	41,154	21,152	51,959	33,378	44,870	5,770	16,457	31,935
Totals	137,812	88,396	218,867	138,006	119,143 ¹	23,978 ²	52,930 ³	138,554

¹ Derby, 1906—Only one Half-crown day.

² Park Royal, 1905—No Five Shilling day; third day, price of admission (2s. 6d.) reduced to 1s. after 3 p.m.

³ Park Royal, 1904—Second and third days, price of admission (2s. 6d.) reduced to 1s. after 4 p.m.

The following tables contain particulars of the entries in the different sections at Liverpool in 1910, as compared with the seven previous Shows and the Liverpool Show of 1877:—

Entries of Live Stock, Poultry, and Produce.

	Liver- pool, 1910	Glou- cester, 1909	New- castle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Park Royal, 1904	Park Royal, 1903	Liver- pool, 1877
Horses . . .	1886	1599	1864	1506	1563	2872	2365	422	389
Cattle . . .	1938	1146	1948	11,030	1926	888	867	944	373
Sheep . . .	772	1802	1695	1672	1564	591	525	520	411
Pigs . . .	361	433	312	368	266	262	227	222	139
Total . . .	2,757	2,980	2,619	2,576	2,319	2,113	1,984	2,108	1,202
Poultry . . .	1,195	754	768	826	811	871	603	763	—
Produce . . .	701	765	416	572	523	493	544	609	101

¹ Exclusive of Double Entries.² Exclusive of Draught Horses and the Harness Classes*Shedding in Implement Yard (in feet).*

Description of Shedding	Liver- pool, 1910	Glou- cester, 1909	New- castle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Park Royal, 1904	Park Royal, 1903	Liver- pool, 1877
Ordinary . . .	7,590	7,575	8,490	7,650	7,818	6,650	7,630	8,900	13,188
Machinery . .	3,555	2,420	2,587	2,195	2,520	1,750	2,060	2,670	2,733
Special . . . (Seeds, Models, &c.)	3,420	2,891	2,980	3,251	2,893	1,629	2,032	2,555	880
Total . . . [Exclusive of open ground space]	13,565	12,886	12,035	13,066	13,030	9,999	11,722	14,585	15,796
No. of Stands.	454	437	389	417	424	289	350	456	428

¹ At the Show of 1877 Exhibitors were allowed to take as much space as they wished for but now the amount is limited to 100 feet of Shedding

DESCRIPTION OF EXHIBITS.

The observations which follow as to the various breeds of animals are for the most part taken from the official reports made by the Judges, and for full information as to ownership, breeding, and pedigree of the prize-winning animals, reference should be made to the complete list of Awards, which appears in the Appendix to this Volume, with the list of Officials and Judges at the Show (see pages xlii. to cxvii.). The Champion Sheep are this year the subjects of illustration.

HORSES.

Without doubt, this section was the finest ever brought together in the Society's Showyard. The heavy horses were especially good, the competitive classes being supplemented by the Parade of Cart Horses on the Saturday.

COMPARATIVE STATEMENT OF ENTRIES, ETC.

AT THE LAST TWO SHOWS HELD AT LIVERPOOL IN 1877 AND 1910.

HORSES AND CATTLE	1877		1910		SHEEP, PIGS, POULTRY, PRODUCE	1877		1910	
	Classes	Entries	Classes	Entries		Classes	Entries	Classes	Entries
HORSES:—					SHEEP:—				
<i>Prizes</i>	—	£2,012 10s	—	£2,476 10s.	<i>Prizes</i>	—	£1,124	—	£1,999 15s.
Shire	6	98	9	86	Oxford Down	3	30	5	54
Clydesdale	6	45	8	58	Shropshire	3	98	8	117
Suffolk	5	28	5	25	Southdown	3	44	6	65
Hunter	6	60	10	123	Hampshire Down	3	19	6	56
Polo Pony	—	—	5	37	Suffolk	—	—	6	23
Cleveland Bay or	—	—	—	—	Dorset Horn	—	—	4	19
Coach Horse	—	—	2	11	Ryeland	—	—	3	18
Hackney	6	44	9	65	Kerry Hill (Wales).	—	—	4	17
Hackney Pony	5	48	4	23	Lincoln	3	45	7	52
Shetland Pony	—	—	3	15	Leicester	3	51	4	23
Welsh Pony	—	—	2	13	Border Leicester	3	17	3	31
Riding Classes	—	—	9	84	Wensleydale	—	—	5	24
Harness Classes	—	—	12	131	Lonk	3	8	4	11
Draught Horse	8	46	5	83	Derbyshire Gritstone	—	—	3	14
Jumping	—	—	4	85	Kent or Romney	—	—	—	—
					Marab	—	—	6	83
					Oatswold	3	44	4	29
					Devon	—	—	3	5
					South Devon	—	—	5	19
					Dartmoor	—	—	3	15
					Exmoor	—	—	3	18
					Cheviot	3	16	3	11
					Carnarvon	3	11	—	—
					Roscommon	3	—	—	—
					Hardwick	3	18	3	12
					Welsh	—	—	3	33
					Black-faced	—	—	—	—
					Mountain	3	10	3	24
					Total for SHEEP	42	411	104	772
CATTLE:—					PIGS:—				
<i>Prizes</i>	—	£2,075	—	£2,840 15s.	<i>Prizes</i>	—	£300	—	£710 10s.
Shorthorn	9	148	18	385	Large White	4	29	6	97
Lincolnshire Red	—	—	8	78	Middle White	4	32	6	58
Shorthorn	—	—	8	35	Tamworth	—	—	6	55
Hereford	9	48	8	27	Berkshire	4	37	6	68
Devon	8	24	6	23	Black	4	13	6	57
South Devon	—	—	5	58	Lincolnshire Curly-	—	—	6	33
Longhorn	3	16	7	44	coated	—	—	—	—
Sussex	6	15	4	16	Other Breed	4	28	—	—
Welsh	4	38	2	2	Total for PIGS	20	139	38	383
Red Poll	3	6	4	18	TOTAL FOR STOCK	159	1,392	344	3,080
Aberdeen Angus	—	—	8	124	POULTRY:—				
Galloway	2	8	4	28	<i>Prizes</i>	—	—	—	£304
Highland	—	—	5	52	<i>Entries</i>	—	—	120	1,185
Ayrshire	2	8	5	62	PRODUCE:—				
Jersey	4	40	5	54	<i>Prizes</i>	—	£463	—	£443 10s.
Guernsey	3	2	5	701	<i>Entries</i>	15	191	65	701
Kerry	—	—	—	—					
Dexter	—	—	—	—					
Dairy Cows	2	20	—	—					
Butter Test	—	—	—	—					
Total for CATTLE	55	373	118	1,096					

Grand Totals for
LIVE STOCK, POULTRY,
and PRODUCE in 1910. } 529 Classes . 4,976 Entries . £10,734² Prizes

¹ Animals exhibited in more than one class are here counted as separate entries.² Including £450 for Farm Prizes, £250 for Horticultural Exhibition, £199 15s. for Competitions.

PARADE OF LIVERPOOL CART HORSES.

This Parade took place on Saturday, June 25, and, notwithstanding the inclement weather, was very successful and undoubtedly the feature of the Royal Show of 1910. No less than 200 animals were exhibited, comprising the pick of the finest geldings in the world; in fact, almost any one of them would have successfully competed in any Showyard in the Kingdom. Liverpool, therefore, in every sense, maintained its proud position of owning the finest draught horses the world can produce. It is stated to be a fact that at all the sales of cart horses the best animals are invariably bought by Liverpool owners.

The firms participating in the display were: The Liverpool Corporation; the London and North Western, the Lancashire and Yorkshire, and the Midland Railway Companies; Messrs. Peter Walker & Sons, Ltd.; Threlfalls Brewery Co., Ltd.; Bents Brewery Co., Ltd.; Messrs T. Rigby & Co.; Mr. Robert Blezard; Messrs. J. Mellor & Sons; The Liverpool Team Owners' Association; the Liverpool Cartage Company; and North Shore Mills, Ltd.

The horses were grouped together outside the Showyard by a body of Stewards, who were gentlemen intimately connected with their working and management, and, from the time of entering the Showyard until the last horse had left the ground, the whole Parade went off without a single hitch. The Large Ring in front of the Grand Stand was entirely filled by the animals on exhibition, and provided a novel and inspiring sight. Splendidly groomed horses, with shining gears, the carters dressed for the most part in the old-fashioned Liverpool style of blue coat and white moleskin trousers, both men and animals presented a spectacle that could not be excelled or equalled anywhere in the world, and represented value in horseflesh of nothing short of 18,000%. Of the first eighty horses exhibited, one well-known cart-horse judge was heard to say he would give 100% apiece for them at any time. The average value per horse was at least equal to 90%.

The gentlemen responsible for the successful organisation of the Parade were: Alderman Menlove, J.P., Councillor William Muirhead, J.P., and Messrs. John Harper, C. A. Still, Reginald Barnett, W. H. Bartrum, J. H. White, J. Westgate, W. O. C. Smith, R. B. Neilson, W. Neilson, and T. Eaton Jones.

Shires.—The Shire classes throughout were very good—better, perhaps, than they have been for some years at the “Royal.” Some of the classes were of very even merit. The brood mare class was an especially good one, and the competition was very keen; some good animals were also found in

the stallion classes, and many of them looked like making valuable sires.

Clydesdales.—The males were very good, the Champion male being of exceptional merit, size, colour, and quality of bone, feet and fetlocks combined. Females were of outstanding merit, being true to type. Brood mares particularly were a splendid lot, many of them being winners at Scotch Shows, the Champion yearling filly being the finest specimen seen for a long time.

Suffolk Horses.—Considering the long distance from home, there was a creditable entry of Suffolks. The two-year-old stallions were headed by *Bawdsey Volunteer*, a colt of good colour, very level, a good mover on the best of feet and legs, and an easy winner. Two animals of quite a different type went into the second and third places. The three-year-old stallions were all excellent specimens of the breed. The winner is a grand colt, and should have a great future before him. The other winners in this class were both well-grown animals, with not much to choose between them. The two-year-old fillies were on the whole a smart lot, and the competition fairly keen. In a small class of three-year-old fillies the winner, *Bawdsey Wax Doll*, is of exceptional merit, and one of the best fillies seen out for some time. The mares (with foals at foot) were all worthy of honours, the winner being a very typical brood mare with a charming foal by "Sudbourne Arabi." The second prize mare is a very heavy animal of the old-fashioned type, but somewhat older than the winner.

Draught Geldings.—This class was not a large one, but the animals were good.

Draught Horses in Gears.—In the open class for working geldings of five years old and upwards, out of fourteen horses entered eleven appeared in the ring. The Liverpool Corporation were successful in obtaining first prize with *John Bull*, a magnificent specimen of the cart horse, and made for moving heavy weights, being a brown horse 17.1 hands high, on very short legs, with deep barrel, well proportioned quarters, and an abundance of beautiful silky feather, also the best of feet. Mr. John Cadwallader's *Duke*, a fine upstanding roan, also fit for any Showyard, was placed second, and third honours went to the Liverpool Corporation with a very fine bright bay horse, which had a sharp competition with the last named for second place.

For the pair of working geldings five years old and upwards, the Liverpool Corporation again succeeded in carrying off first honours with *John Bull* and *Inkerman*. Second prize went to the Lancashire and Yorkshire Railway Company with *Bobby*

and *Jack*, and the Liverpool Corporation were awarded third prize with a chestnut and a roan.

The next two classes were confined to members of the Liverpool Team Owners' Association, which body also provided the prizes offered for competition. Out of nineteen entries in the single class seventeen came into the ring for adjudication, all fine specimens of the Liverpool working cart horse. First and second positions were secured by Messrs. John Jarvis & Sons, Ltd., Messrs. Wm. Roberts & Son were placed third, and Mr. Thomas Singleton fourth.

In the class for pairs seventeen out of eighteen entries came under the Judge's notice. Messrs. John Jarvis & Sons, Ltd., were again successful in securing first and second prizes, third going to Mr. Thomas Singleton, and fourth to Messrs. Garlick & Burrell, Ltd.

Hunters.—The yearling colts were weak, the two-year-old colts fair, and three-year-olds a good class. Fillies were very strong throughout, both in numbers and merit, particularly the yearling and two-year-old classes, both of which produced winners of exceptional merit. The brood mares light weight class was strong numerically, and the first three prize winners were, in the opinion of the Judges, good enough to win in any company. The heavy weight mares were not so strong. The foals throughout were quite up to the average, the colt foals being better than the fillies.

Polo and Riding Ponies.—On the whole these classes were good, and the standard of merit quite up to, if not over, the average. The Judges were favourably impressed with the young stock, which were unusually even in quality and type. Class 43 was good in quality; the winning stallion, *Spanish Hero*, was once more awarded the Championship, the second prize animal, *Othrae*, again being Reserve Champion. The yearlings were a splendid class. The winner, *Oyster Shell*, was a filly of great quality, of lovely type and a taking mover. *Silvester*, the second prize animal, was a great colt and ran the winner very close. The third, *Sparkling Crocus*, was a sweet filly, but rather short of substance. Of the two-year-olds, the first, *Coral Reef*, was an excellent filly of the highest class, with beautiful shoulders and a good mover. The second, *Honeysuckle*, was a very good sort; and this was generally a nice class. Another good class were the three-year-olds; the winner, *Romany*, was a great filly, correct in every way and possessing bone and substance. The remaining winners were quite good ponies. The brood mare class was poor in numbers. *Patricia*, the first, also won the Champion Gold Medal. She was a chestnut of perfect type and just the sort to breed from. The second, *Black Bella*, was a grand

little mare, but had to give away a great many years to the winner.

Cleveland Bays or Coach Horses.—In the two classes there were altogether only nine exhibits—six in Class 50 (stallions foaled in 1907 or 1908), only one of which was a Cleveland Bay, and three in Class 51, all of which were Cleveland mares. Though few in numbers, both classes were good in regard to the quality of the exhibits. Class 50 was representative of the breed of Yorkshire Coach Horses, and those noticed in the awards combined bone and quality, coaching outlines, and action in just the degree that breeders of Coach Horses should keep in view; colour also was good, most of the exhibits being clear bright bay with black points. The only Cleveland exhibited was placed second, and reached the standard of Coach Horse action and quality. In Class 51 (brood mares and foals), the exhibits were all good. The mares placed first and second were similar in type and colour. Both displayed fine quality and action with the substance of the Cleveland breed. The mare placed third was a very useful specimen of perhaps an older-fashioned type of Cleveland.

Hackneys.—This section was most interesting to judge, as the classes on the whole were well filled and the animals exhibited were some of the best in the country. Owing to the slippery state of the ground some of the young Hackneys did not make such a good show as they otherwise would have done. The Champion mare was a beautiful animal, and the three-year-old stallion, Sir Walter Gilbey's *Antonius*, never looked better or made a better show than he did on this occasion. The horses were a very creditable lot, especially the stallions.

Harness Horses.—Many of the best-known exhibitors were represented in this section. Owing to the rain-sodden ground the ring was very heavy going, and there was not the display of action there might have been had the conditions been otherwise. However, the entries were numerous, and it was refreshing to the Judges to see several new exhibitors, or, rather, several novice horses shown. The team and novice classes were good, and the double harness horses also made a very fine display.

Milk Turnouts.—For the prizes offered in these classes there was a splendid entry, no fewer than twenty-five competing. They were all well turned out, and gave great credit to the exhibitors. The Judges found some difficulty in deciding which was the best. Special notice was taken of the manners of the horses, they being made to stand unattended, and also to back. This was considered very essential for an animal employed at this work, as often in their daily rounds they would be expected to do so. Some of the horses shown would

neither stand nor back, but most of them were well trained. It was an excellent class, and one that deserves every encouragement.

Shetland Ponies.—There was quite a nice show of the breed, both in the male and female classes. The winning stallion was a young one, not perhaps so well furnished as the older ponies placed after him, but he was a very good type, well balanced, a very good mover, and looked like growing into a valuable sire. The second was a beautiful small pony that also went well, but he looked somewhat top-heavy, and was deficient in bone, compared to the first. The winner in the class for mares was a very good one that easily stood out from the others. The second was of the same type, but she lacked the freedom of action and pace of the first. The third was a nice small pony that went with a good deal of force, but her rather poor forehand detracted from her other good points.

Welsh.—The Judge, in his report, states that the Welsh Ponies at the "Royal" this year were nearly all the same animals that had hitherto been shown at the London and Royal Shows. In the stallion class they were exceptionally good, the cream of the Welsh Pony stallions were in competition, but the Judge was sorry to find the celebrated *Greylight* not going in his usual form, *Shooting Star* being placed above him. *Grove Ballistite*, looking better than usual, came third. In the mare and foal class there were several very nice ponies. *Mountain Marvel*, the London winner, was placed first, a very sweet sort of pony, but rather thick in the shoulder. *Grove Dusky Mite*, a typical Welsh Pony, rather on the small side, went a little disappointingly, so she had to take second place.

Jumping.—In the jumping classes the competition was very keen, and all the best horses in the country took part. Several of them made clean rounds, and the performances were much appreciated by the large crowds around the ring.

CATTLE.

Shorthorns.—The general quality of the exhibits was above the average, and there was a uniformity of type which must have impressed both breeders and exhibitors. It was very noticeable that there were fewer inferior, or overfed, animals than usual, and the cattle generally were brought out in very nice condition. The classes for bulls were good, and some of the younger animals promised well for the future. The Champion bull, *Duke of Kingston 2nd*, awarded the first prize in Class 85, was an outstanding winner. He is a very handsome rich roan, of great scale, beautiful quality and type, and very

level. The second prize bull in this class, *Birdsall Cræsus*, is also a grand bull of good type and character. The heifer classes contained some very promising youngsters, while some of the older females appeared to be overdone, which must have a prejudicial effect on their breeding. The judging of these classes occupied the whole day from 9 a.m. to 5 p.m.

Dairy Shorthorns.—These were an excellent lot, and the classes generally were well filled. In Class 96 were found several good bulls, straight in their lines, with good flesh and quality, which should become good sires for the dual-purpose Shorthorn. Class 97 was a splendid one, and, in the Judges' opinion, the best ever exhibited at the Royal Show; the yield of milk given in the ring proved the excellence of the exhibits. The highest quantity was 37½ lb., and only two cows gave below 25 lb. Class 98 was good, though not so many in numbers. The winner was the Champion Dairy Shorthorn cow, a beautifully balanced animal of excellent quality and bag, giving in the ring 30½ lb. of milk. There were several others of high merit. The class milked out well and only one cow gave below 20 lb. The heifers in Class 99 were not quite so even in type as the previous classes. The prize winners were nice Shorthorns with good udders, and the class generally milked out fairly well. The Challenge Cup for the best group was awarded to Mr. Adeane for the first prize heifer in Class 99, the second prize cow in Class 97, and a yearling bull.

Lincolnshire Red Shorthorns.—Taking into consideration that the Show was held a long way out of the district for Lincoln Reds, there was a very good show. Bulls calved in 1904, 1905, 1906, or 1907 (Class 101) were very good indeed, especially the three that headed the class. The winner was a well-grown, thick-fleshed, and well-made bull. The second prize animal was not so far behind the winner, being particularly full of lean flesh and near to the ground. There were only two exhibits in Class 102 (bulls calved in 1908). They were both very useful bulls, the winner being the neatest made. The second prize bull was inclined to be patchy and short of lean flesh. Class 103 contained some nice young bulls, the winner being a good one, well made, and true to type. The winner in Class 104 (cows in-milk, calved in or before 1906) was a good animal full of flesh, well made, with a good udder. Some cows in this class were shown very short of flesh, but had good udders. The first prize animal in Class 105 was a very good heifer, full of flesh and well made. She had no difficulty in heading the class. The other heifers in this class were a good lot, and, taken as a whole, this was the most even class of females shown. The first and second prize heifers in Class 106 were well to the front,

but the remainder were also useful animals. The winner in Class 107 was a very neatly made young heifer, and had no difficulty at all in winning. The second and third prize heifers in this class were good specimens of the breed.

Herefords.—The Judges report that there was an excellent collection of this breed of more than average merit. The outstanding feature was the old bull class, either of the three leading bulls being worthy of a first prize. It was a close fight for first place. The massive frame and extraordinary hind quarters of *Sailor Prince* eventually won him the premier position, and afterwards the Male Championship. The class for two-year-old bulls contained several useful animals, the winner being a well grown level bull. There was a good class of bulls calved in January or February, 1909, the first was symmetrical, the second of size and substance. There were few entries in the class for bulls calved on or after March, 1909. The cows were useful breeding animals, full of character and showing good milk vessels. There were only two three-year-old heifers. The first being a typical Hereford with well-sprung ribs and great substance, unfortunately showing signs of showyard training, as also did the other entry. In the two-year-old heifer class it was a close fight between the first and second. The first of great size and level top, the second stylish but somewhat uneven flesh. There was a good class of yearling heifers, the winner being an attractive animal, well grown, smart, and full of character. The Male Championship was awarded to *Sailor Prince* as stated above, *Rob Roy*, second in the same class, obtaining the Reserve card. The Female Championship was awarded to *Ladybird 2nd*, first in the two-year-old class, and the Reserve to *Shelsley Primula*, first prize yearling heifer.

Devons.—Being far from home the Devons came out in small numbers, but all the same there were many animals of exceptional merit, the best classes being those for yearling bulls, cows and two-year-old heifers, the first prize in this latter class going to a beautiful heifer of good type, which afterwards won the Female Championship. The class for dairy cows brought out four animals, all combining good type with high milking qualities, and well illustrating the all-round capabilities of the breed.

South Devons.—Considering the long distance from home, South Devons were well represented, there being some very fine specimens of the breed in each class. The winning old bull and cow for live weight would be among the heaviest beasts in the Showyard. Young bulls were good, and heifers a very strong class. The exhibitors deserve great credit for sending their cattle so far.

Longhorns.—*Eastwell Emperor*, awarded the first prize in Class 131, was a bull of very great merit, possessing all the qualities which make the breed so valuable. The second prize animal, *Putley Regent*, was a very promising young bull, of large size, excellent quality, and even flesh. *Waddon Friar*, awarded first prize in Class 132, was a bull of most excellent quality, symmetry, size, and flesh. The second prize winner, *Arden Premier*, is a very good bull, with very thick and even flesh. In Class 133, the first prize went to *Bentley Dido*, a cow showing all the most prized qualities of the breed. *Putley Portia*, the second, was only inferior to the winner in point of size. In Class 134, the first prize was awarded to *Arden Nora 2nd*, a heifer of great size, symmetry, quality, and flesh, who looked like developing into a very good cow. *Putley Milkmaid*, the second prize winner, was a most beautiful heifer, but not quite so big as the first prize winner. The Judge highly commended the whole class, as he considered it the best class of Longhorns he had ever seen, and showed in a marked degree the progress the breed is making in beauty and utility of form since the institution of classes by the Royal and other Societies. The Challenge Cup was awarded to Lord Gerard for *Eastwell Emperor*, Mr. W. H. Sale's *Arden Nora 2nd* being Reserve.

Sussex.—The locality of the Show, no doubt, accounted for the comparatively small number of entries—twenty-seven, out of which eighteen put in an appearance. In Class 136, the old bull, *Apsley Liberty*, had no trouble in winning. He is a bull of great substance and fine quality. Class 137 was headed by *Lavington Gold 7th*, a young bull of considerable promise. In the cow class, *Apsley Fairy*, a fine specimen of the breed, was first, followed by *Sweet Pea 10th*. Class 139 was generally good. In Class 140, *Lavington Nora 2nd*, a nice heifer, was first, followed by *Lynwick Paley Mabel*, the third going to a heifer from the same herd, *Lynwick Anemone*.

Welsh.—The Welsh cattle section was not up to the standard of previous years, especially in one or two classes, such as the two-year-old bull class, where there was only one exhibited, and that of very ordinary quality. In the old-bull class, there were some very good animals, the first prize winner being an exceptionally good bull. The female classes were rather weak in numbers and quality, except the first prize winner in the yearling classes, which the Judge considers one of the most perfect specimens of a Welsh beast ever shown.

Red Poll.—There was a strong class of old bulls, all of excellent type, the first and Champion being found in *Davyson 297th*. The second and Reserve Champion were awarded to a younger bull, *Acton Corous*, born in 1908, a symmetrical bull

of good quality. Among the younger bulls, *Red David* was an easy winner, though his competitors were good specimens of the breed. The cows were of an irregular type and size, some being beef and others being dairy animals. Selection was made in favour of milking qualities, the winner and Champion being *Waxlight 2nd*, a level cow with good udder, and the second and Reserve Champion, *Frill*, a typical wedge-shaped cow. Of the heifers calved in 1908, the first three were a smart lot. The strongest class of all was the yearling heifers, and the difficulty found in selecting winners augurs well for the future of the Red Poll breed.

Aberdeen-Angus.—There was a creditable display of the breed. Females were, on the whole, better than the males. There was a large and remarkably good class of yearling heifers.

Galloways.—Unfortunately there was a small number of cows shown, but the quality of these was of a high class. The best class of the breed was that of the heifers. The first prize bull, *Keystone*, was a typical and creditable specimen of the breed. The yearling bulls, three in number, possessed excellent characteristics.

Highland.—The two classes for this breed only attracted one entry each, and these were both made by the same exhibitor.

Ayrshires.—This breed were an altogether superior show. The first prize bull, *Beuchan Peter Pan*, was Champion bull in Scotland this year, and has since been sold to go abroad. Mr. Mitchell's first prize cow in milk was a very fine specimen, good vessel and teats, and in every way like a good dairy cow. *Auchlochan McLean* was a very good second, her age is beginning to show a little but she is a well-known cow in the Ayrshire Showyards, having been a winner at Kilmarnock, Glasgow, The Highland, &c. She was closely followed by *Knockdon Prim*. In the cow or in-calf heifer class there were only two exhibits, Mr. Mitchell being again the winner with a cow of good appearance, and Mr. Cross second with *Knockdon Bridesmaid IV*, which was a winner at other shows.

Jerseys.—Class 170 was excellent, containing as it did, half a dozen high class old bulls of good type. Class 171 (yearling bulls) was not a strong class but the first and second prize animals were of the right stamp and should do well in the future. Class 172 was a good one, a very nice cow being placed first, followed by four or five animals of good type and quality. The prize winners in Class 173 were good, but the rest were moderate. In Class 174, the winner was an exceptionally good animal, with two nice heifers second and third, but the rest were of no special merit. Class 176 (for

cows bred by exhibitor and sired in Great Britain or Ireland) was a very creditable class and naturally consisted of animals previously seen by the Judges. The yearling heifers (Class 175) were good, the prize winners generally showing great dairy promise.

Guernseys.—The competition was not particularly keen, owing to the fact that Liverpool is so far from the Counties in which Guernseys are kept in any numbers. Class 178, for old bulls, was won by a very good specimen, *Hayes Coronation 3rd*. Class 179 contained some very good young bulls, *Hayes Cherul* was first, his stable companion, *Hayes Fido*, being second. The reserve animal is heavy on the shoulder, or would have been placed higher. Class 180 was headed by *Hayes Olive*, a very good cow, as are also the second and reserve. Class 181 contained no heifers of very special merit. Class 182 was very small, the winner was a gay handsome calf, but quite fat enough.

Kerry.—As a whole, this section was rather disappointing, with the exception of the prize winners. The first prize bull, Lady Greenall's *La Mancha Diver*, was an outstanding winner, being afterwards awarded the Championship. The first, second, and third cows were true to type, and had grand bags. Three-year-old heifers were a moderate lot, except the first and second prize winners. The two-year-old class was small, the only prize awarded going to a very useful heifer.

Dexter.—In Class 189, the ages of the bulls varied from two to five years, the first prize animal, *Tom Thumb*, was a very short-legged, thick-set, typical five-year-old. *La Mancha Hard to Find*, awarded the premier prize in Class 190, was an outstanding winner, although all the exhibits in this class that were mentioned in the prize list possessed great merit. Several good heifers, especially the winner, were entered in Class 191. The young heifers in Class 192 were a promising lot, and should develop into fine cows. These classes, as a whole, were excellent, the Champion of the breed, *La Mancha Hard to Find*, and the first prize bull, *Tom Thumb*, which was Reserve for that honour, being especially worthy of mention.

Dairy Cattle.—Classes 194–198. The open classes were small in numbers, but the local classes filled well, and the cattle generally were of high merit. Only four cows were exhibited in Class 194. The prize winners were good cows with well shaped udders. The same remarks apply to Class 195. Class 196 contained many excellent dairy cows, and besides the winners four others were awarded highly commended and commended cards. Class 197 was a good class of dairy cows with capital udders. Besides the winners, three others were awarded highly commended and commended cards. In Class 198 were also some excellent dairy cows, though some

of the pairs were not quite well matched. Besides the winners, two pairs were awarded highly commended and commended cards.

SHEEP.

Oxford Down.—These were well represented in the shearling ram class. The first prize sheep was an excellent specimen. The single ram lambs were useful, the first prize winner being a very strong one. The class for three ram lambs was also very typical of the breed, the winners being very true-grown sheep. The three shearling ewes class was also good. The third prize pen had evidently seen their best day, or would have stood higher. The "three ewe lambs" class had much the character of "three ram lambs" class, and the exhibits looked like making good sheep.

Shropshires.—In Class 205 (two-shear rams) the first prize was awarded to a fine masculine ram, doubtless a good sire, but the remainder were just moderate. Class 206 (shearling rams) was fair, with a very good sheep at the top. Class 207 (five shearling rams), always a great feature in the Show, this year also contained a lot of good specimens of the breed. The new class, 208 (three shearling rams—novice), appeared to be much appreciated by the exhibitors, there being a good entry and keen competition. Class 209 (three ram lambs) contained some good youngsters, especially in the leading pens. Class 210 (three ram lambs—novice), as in the shearlings, was well filled with a lot of promising youngsters. Class 211 (three shearling ewes) was, in the opinion of the Judges, the best lot among the Shropshires, containing beautiful ewes in the prize pens. Class 212 (ewe lambs) was very good and there was keen competition. Altogether there was a grand display of the breed.

Southdowns.—Class 213 contained twelve exhibits, the prize winners especially being of good Southdown type. Class 214 was a very good one with sixteen exhibits, the prize winners especially being typical Southdowns, with good wool and flesh. These remarks apply strongly to the Champion (see Fig. 1) and Reserve Champion rams, both of which were in this class, and showed all the good qualities for which the breed is renowned. The first prize winners in Class 215 were three rams well brought out, and the class as a whole meritorious. The eight exhibits in Class 216 showed much promise. Although the entries in Class 217 were not so numerous, still the competition was very keen and close, and the different pens were well brought out. Class 218 contained some very promising lambs. The Judges would like to remark that some of the exhibits in the Southdown classes did not appear to have been shorn as barely as they might have been, and



FIG. 1.—SOUTHDOWN SHEARLING RAM.
Winner of Champion Prize for best Southdown Ram, Liverpool, 1910.
Exhibited by MR. F. H. JENNINGS.



FIG. 2.—HAMPSHIRE DOWN RAM LAMBS.
Winners of Champion Prize for best Ram Lamb, Pen of Ram Lambs or Ewe Lambs, Liverpool, 1910.
Exhibited by MR. HENRY C. STEPHENS.



FIG. 3.—DORSET HORN RAM LAMBS.
Winners of Champion Prize for best Ram, Pen of Lambs or Ewes, Liverpool, 1910.
Exhibited by SIR E. A. HAMBRO.

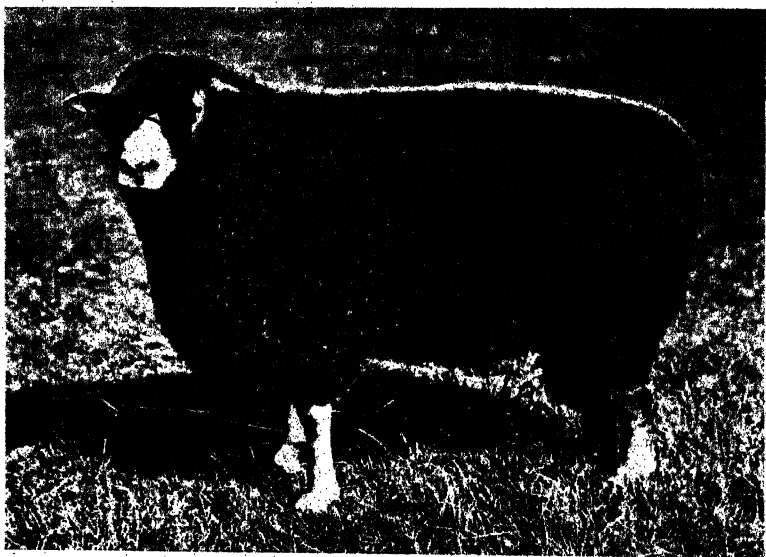


FIG. 4.—LINCOLN TWO-SHEAR RAM, "POINTON VULCAN."
Winner of Champion Prize for best Lincoln Ram, Liverpool, 1910.
Exhibited by MR. TOM CASSWELL.

this they cannot help thinking rather militates against the breed.

Hampshire Downs.—These classes were quite up to the average, and competition was very keen, particularly so in Classes 222 and 224, for ram lambs and ewe lambs respectively, the leading pens in each case showing exceptional quality and breeding. The Champion prize was awarded to Mr. Henry C. Stephens' exhibit of three ram lambs, which gained the first prize in Class 222 (see Fig. 2).

Suffolks.—In the two-shear ram class the first and second prize sheep were good specimens of the breed. In the shearling class the first prize sheep was very wide and deep, with plenty of colour and good wool. The second and third prize winners were also good specimens and true to type. The ram lamb classes contained some well-grown forward lambs. The shearling ewe class had but two entries, the first prize pen being of very nice quality and true to type. The ewe lamb class contained some very good specimens of the breed. The first prize pen were very even and of good quality, and the second prize pen were forward, but they did not match as well as the others. The third prize pen were nice matchy animals of good quality, but younger.

Dorset Horn.—These made an exceptionally good show, particularly the ram lambs, a pen of which (see Fig. 3) carried the Championship over a very grand shearling, which was light in wool. The shearling ewes and ewe lambs were also a very good lot.

Ryelands.—The three classes made a fair exhibition of the breed, the animals being typical specimens. There was not a bad sheep in Class 235, the winner being of fine type, active, with symmetrical body, good coat and flesh. The next class was not so good, the first prize ram being much ahead of the others and having the best of flesh and wool. The shearling ewes were a good lot, the first and second pens especially so. Evidently some exhibitors do not realise the importance of matching the ewes, which is essential in order to get to the front.

Kerry Hill (Wales).—The exhibits in these classes were not so numerous as might have been expected, considering the near proximity of Liverpool to the counties where these sheep are principally bred. Most of the exhibits were of splendid quality and typical specimens. The first prize sheep in each class deserve special mention.

Lincolns.—The winner in Class 242 was a fine commanding sheep of typical Lincoln type, and eventually placed Champion (see Fig. 4). The first prize winner in Class 243 had a level Lincoln skin, good head and carriage, and was Reserve ram for

Champion. The second and third prize winners were very close runners up. Class 244 (five shearling rams) was more representative of the breed than the single shearlings, the three winning pens being well-matched lots. The first prize pen of shearling ewes in Class 246 had an easy win and, later on, were awarded the Challenge Bowl in the class composed of one ram and three females bred by exhibitor (see Fig. 5). Class 248 was a fine example of the tremendous length and density of wool combined with quality which this breed is capable of producing.

Leicesters.—In Class 249 were some useful shearling rams, the first prize sheep being very strong, with plenty of bone and wool, the second and third prize sheep being very nice equal sheep, full of quality, but much smaller in size. In Class 250 (ram lambs), the first prize pen were very useful strong lambs with good coats. The second pen were very full of quality, but not quite so well grown. In Class 251 (shearling ewes), the competition was very close, the first prize pen being very equal, full of quality, and well deserving of the prize they obtained. In Class 252 (three ewe lambs), it was a most difficult task to decide between first and second, the first prize lambs were rather more uniform in size and quality than their strong opponents.

Border Leicesters.—Both in numbers and quality the show of this breed was an exceptionally good one, and it is pleasing to see this deservedly popular breed making such a good appearance at the leading Show in the Kingdom for all classes of sheep. In the class for rams, two-shear and upwards, five were forward—a fair entry considering the reluctance of breeders to bring out their stud rams in show form. The prize winners are a nice lot, the first prize ram being a very good handler, and well covered with a nice wool, the Challenge Cup for best Border Leicester exhibit was also awarded to this sheep (see Fig. 6). There was a grand show of shearling rams, many sheep of extra merit being exhibited, which looked like taking some beating at the leading shows during the season. The class for shearling ewes is also a good one, the first and second prize winners being sheep of extra quality, and so evenly matched that it was difficult to decide between them.

Wensleydales.—In Class 256 (rams two-shear and upwards), *Royal Gloucester* was an outstanding winner, and a typical specimen of the breed. Class 259 (ram lambs), contained some well-grown typical lambs, considering that in this breed the lambing season is somewhat late. Class 260 (shearling ewes), was perhaps the best in the section, the prize winning pens being excellent specimens of the breed.

Lonks.—Although the entries were not large, the specimens shown were quite representative of the breed. All the first



FIG. 5—LINCOLN SHEARLING RAM AND THREE EWES

Winner of Champion Prize for best group of one Ram and three Ewes, bred by Exhibitor, Liverpool, 1910
Exhibited by MR HENRY DUDDING

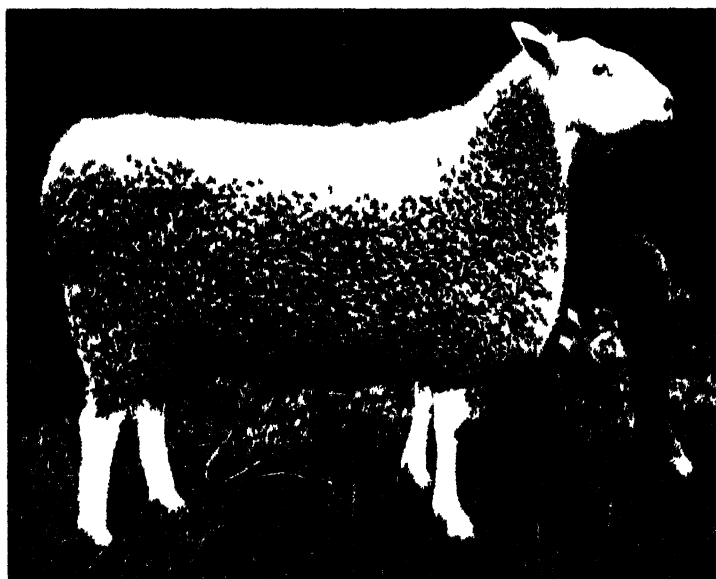


FIG. 6—BORDER LEICESTER RAM, DUNCHRIE PRIDE

Winner of Champion Prize for best Border Leicester Ram of Fine Liverpool, 1910
Exhibited by THE RIGHT HON A J BALFOUR, M.P.



FIG. 7.—KENT OR ROMNEY MARSH TWO SHIRE RAM.
Winner of Champion Prize for best Kent or Romney Marsh Ram, Liverpool, 1910
Exhibited by MR CHARLES FULT



FIG. 8.—WELSH MOUNTAIN SHIRING EWES
Winners of Champion Prize for best Welsh Mountain Ram or Pen of Ewes, Liverpool, 1910
Exhibited by MR JOHN GREVILLE GRAYSON

prizes were won by sheep exhibited by Mr. Hague of Copy Nook, near Clitheroe, his two-shear being a good winner in the aged ram class. He is fine in bone with good flesh, a splendid coat of fine wool, so necessary for a mountain sheep, a real grand shaped head with bright black and white colour. The second prize winner was a very good ram, well grown, but with fleece and colour not quite satisfactory. The third prize went to an exceedingly good young shearling, smart in colour, with good flesh and quality, that had the making of a smart sheep that will most likely be heard of again. In the ram lamb class there were only three entries: the first a well grown lamb, with good flesh and wool, smart in colour and quality, the second a very smart lamb, a younger lamb and not quite so well grown as the winner, good in touch, wool, and quality, that will very probably be heard of again. The three pens of shearling ewes were a grand lot. The winners were fine specimens of the breed, well matched, good all round in flesh, wool, and colour, with fleeces well fitted for the cold wet hills of East Lancashire. The second pen were well grown with good flesh and wool of best quality. The third pen were not well matched but contained one very good sheep, the heads of the other two suggested a cross of a somewhat coarser strain. There were only two pens of three ewe lambs, all of smart quality and not a great deal to choose between them, the first prize pen were better grown, the second pen were very good, and may in future turn the tables on the winners.

Derbyshire Gritstone.—The three classes were represented by 14 pens and, taken as a whole, they were very good. Taking the three winners from each class they made an average of 82 points taking 100 for the ideal sheep; still there is room for improvement, particularly in body, wool, and colour. The best sheep were to be found in the class for shearling ewes, the three winners making an average of 87½ points out of the 100. The two-shear rams came next with 80 points. The weakness of body and wool was more marked in the rams than in the ewes.

Kent or Romney Marsh.—Considering the long distance from their home, all six classes filled well, and throughout there was a very great improvement in the breed. The two-year-old rams were very good, the first prize and Champion sheep (see Fig. 7) being one of the best of the breed the Judges had ever had before them. No exceptional, outstanding, good sheep was exhibited in the class for ram tegs. The pens of five ram tegs in that class were exceptionally good, and, no doubt, that somewhat detracted from the single ram teg class. Ewe tegs were very good, particularly the first-prize pen. Ram lambs and also the ewe-lamb classes were found somewhat

difficult to judge, it being early to take them away from the ewes, as they are not, as a rule, dropped until the middle or later part of March. Consequently, thus early, they did not show to advantage. The classes were very good at their age.

Cotswolds.—The classes were all well filled with excellent specimens of the breed, and there were fresh exhibitors in open classes. In every instance, the third prize was well deserved. Shearling rams were an excellent lot, and both first and second prize winners deserved special mention. The yearling ewe class was a good one, many of the pens being of so nearly equal merit that it made them difficult to judge. All the exhibits in both classes of lambs were forward in condition and true to type.

Devon Longwools.—There was only one exhibitor of the breed, but the animals were, as a whole, good. In the old ram class, the single entry was a very useful sheep, and in the shearling ram class, the winner was decidedly good. In both pens of shearling ewes, there were some nice sheep, but they were hardly as "matchy" as the Judge would have liked to have seen them.

South Devon.—These sheep made a very fair show, considering that they were so far from their native home. On the whole, they were typical of the breed but lacked uniformity. The two-shear ram class had a small entry, but contained good specimens of the breed. The shearling ram class was the strongest that came before the Judge, the prize sheep being of the type to be aimed at. The ram lambs had an exceptionally good pen, and the winners were followed by a pen of nice type. The shearling ewes were not so strongly represented as one would have wished, and their type did not correspond. Ewe lambs were better represented, and had several of a nice type and character.

Dartmoors.—This breed was much more largely represented than usual—by nine different exhibitors. Some of the classes were rather uneven, but the winners of prizes were really grand specimens of the breed. The old ram class was not well filled, but the first and second prize winners were animals of good character. The shearling ram class had seven entries, which, considering the great distance from the home of the breed, was very creditable. The shearling ewes were a good lot, with excellent coats.

Exmoors.—The three classes were fairly well filled, considering the distance from their home, and the specimens, as a whole, were very good, especially the shearling ewes, which were a great credit, not only to the breed, but also to their owners.

Cheviots.—The classes were not well filled, but the exhibits were of first-rate quality. The sheep had beautiful heads and

carried grand carcasses of mutton, and the winners would be difficult to beat on any showground.

Herdwicks.—The first prize winner in Class 295 (ram, two-shear and upwards) was an exceedingly nice sheep, with grand head, typical of the breed, though not without fault. The second was a big sheep, with good wool and bone, strong back and loin, but without the appearance of the winner. In Class 296 (shearling rams), the first prize went to a good sheep showing good breeding, and the second should grow into a useful sheep. Class 297 (shearling ewes) was the most uniform and best class of the breed. The first prize winners were a big, good, level pen, and were run very close by the second prize pen.

Welsh Mountain.—The two-shear ram class was a fairly good one. The winner was of excellent quality and type. In this class there was a sprinkling of medium animals some not being true to type. The first prize pens in the shearling ram class are nice "typy" sheep, especially the first, which were models of the breed. Two rams and two pens of ewes only competed for the Silver Cup, which was awarded to Mr. John Griffiths Gratton for his three shearling ewes (see Fig. 8). Several others were not eligible according to the conditions, so that the first prize ewes could not compete for the Cup.

Black-faced Mountain.—The animals of this breed were the best that have been shown for some years. In all the classes there were good representatives of the breed. This applied more particularly to the gimmers, which made the best class, including as it did a good number of very meritorious animals. The first prize aged ram, which was a four-shear, was a very typical specimen, and showed his robustness of constitution by being presented in such perfection of bloom at his age.

PIGS.

Large Whites.—The Large White pigs as a whole were an excellent show. In Class 304 (boar farrowed in 1906, 1907, or 1908) the first prize was awarded to No. 2401, a very fine pig of great quality, farrowed in 1908, which would have been about perfect with a little more size. This boar was Reserve Champion. The second prize went to No. 2400, farrowed in 1907, a boar not unlike the first. The third prize, No. 2404, farrowed in 1906, was similar in type to those placed in front of him. Class 305 (boar farrowed in 1909) only contained six entries, and was about the poorest class. The first prize was taken by No. 2409, a nice quality fine boar with a good top, but rather short in the face for a Large White. Class 306 (boar farrowed in 1910) contained no fewer than thirty-eight entries, a very large class, with a lot of very good pigs and a

few inferior ones. The first prize went to a fine, well-grown, good quality pig, No. 2419. This was a really good young pig, of great length and nice style. The second prize went to No. 2423, and the third prize to No. 2425, both excellent young boars of fine type and quality. Class 307 (sow farrowed in 1906, 1907, or 1908) was a very grand one, in fact so good, that they all received commendation. The first prize sow, No. 2452, which was also Champion of the breed, was farrowed in 1906, and is of immense scale, with wonderful quality, a very fine type of the breed. The second prize went to No. 2463, a sow of similar type, a year younger, and consequently not the size. The third prize was taken by a neat, good sow, No. 2456A. Class 308 (sow farrowed in 1909) was also very good, the three prizes going to Nos. 2465, 2467, and 2466, all sows of good type and brought out in splendid condition. There were eleven sows in this class, of which eight were noticed. Class 309 (three sows farrowed in 1910) had sixteen entries: a very commendable lot. The first prize was awarded to pen No. 2480, three typical young sows of good size and fine quality. The second prize was won by pen No. 2482. These pigs were evenly matched and of great size, but lacked the quality of the winners. The third prize went to a pen of nice quality pigs, No. 2488.

Middle Whites.—In Class 310 there was an entry of five, of which there was nothing outstanding with the exception of the winner, which proved to be Champion. There was an entry of seven in Class 311. The winner was a very good animal, but on the large size and very heavy in his jowls. In Class 312 there were, among the sixteen entered, some very promising young boars. In Class 313 there was an entry of nine, including some very good sows indeed, but the winner, owned by the President, was quite outstanding. The winner in Class 314 was a splendid beast with weight and quality, beautiful in her bone and carriage, a most typical animal. The winning pen in Class 315 were not the same scale as some, but they were splendidly matched. In fact all the pens were worthy of commendation. The total number in the six classes for Middle Whites was fifty-two pens with sixty-eight pigs, and, taking them on the whole, they were a most creditable lot. The winning animal in Class 314 was the most true to type of anything the Judge had ever seen. The beautiful type and quality combined could not be equalled.

Tamworths.—The classes in this section were well supported, and taken as a whole, the breed was well represented. Class 316, for old boars, was quite the weakest class, the first prize winner being the only good boar in the class. This pig was enormous in size, wealthy in flesh, and good on his legs. In

Class 317 (boars farrowed in 1909) the first prize winner was an exceptionally good animal, winning easily, and afterwards placed Reserve for Champion. Many of the seventeen entries in Class 318 were well-grown good boars, farrowed in 1910. The three prize winners were typical Tamworths, correct in colour, and very promising pigs. In this class there were a few well-grown boars, which would undoubtedly have been placed more forward had they had good skins and been free from black spots. *Constance*, first and Gold Medal winner in Class 319 (old sows), nine entries, is an exceptionally fine sow, having great length and depth, beautiful type, and good colour. The second and third prize winners were also grand sows. In Class 320 (sows farrowed in 1909) the first prize winner was a grand young sow, well shown, having beautiful colour and coat, with length, depth, and quality. The second prize winner ran close, being a very promising young sow, true to type, an excellent specimen of the breed. The first prize winners in Class 321 were well matched, with more size than the second prize winners, which were very smart. The other pens nearly all contained two good gilts and a weak one.

Berkshires.—Class 322 was a useful class, the winner being a grand specimen of the breed. The second prize winner was extremely neat and of good quality, but rather on the small scale. Class 323 was a moderate class, the first prize animal being an easy winner. Class 324 was also quite moderate. The first prize animal was very neat and of nice quality: the remainder were difficult to place, no really promising young animals being amongst them. Class 325 was good. The first was a grand sow, and the second ran her very close. Class 326 was excellent, the winner taking the Champion prize easily, and the second being Reserve Champion, both being very good animals. There was only a moderate lot in Class 327, no really good pen being forward. The Berkshires as a whole were not quite up to the usual standard, the first prize old boar and the first prize sows excepted.

Large Blacks.—Nearly all the classes were filled with well-grown specimens, and mostly possessed characteristic points of the breed. An improvement was observed in the uniformity of type, but a weakness still exists in this respect, and needs further improvement. The old boar class (328) was not a large one. *Henley Achilles*, the winner and also Champion, although a typical boar, lacked smartness, owing to age. He was pressed very close by the second prize winner, *Sudbourne Saint*. Class 329, for boars farrowed 1909, was well filled. *Tiptree 2nd* was an easy winner, and should make a grand boar when developed. In Class 330 (boar pigs farrowed 1910), although there was a good entry, no exhibit stood out prominently as

being much better than others: very little difference existed between the winners. Class 331, for old breeding sows, deserves special mention for showing exceptional quality all through, there being a very close fight for honours, *Trevellos Lass 4th*, winner and also Champion, being a typical specimen of rare quality.

Lincolnshire Curly-coated.—The winner in Class 334 was of grand type, standing well on joints, and well deserved the Champion honours for boars, the second and third being also very good pigs. Class 335 did not come quite up to the standard, and might have been better. Class 336 was a very strong class. Although there were only two entries in Class 337, the winner (also Champion in sow classes) was a beautiful sow, showing great length, size, quality, and excellent flesh, a perfect type of a Curly-coated pig. Class 338, though small, was of great merit, the winner being also Reserve for Champion. Class 339 was well filled, the winners being well matched.

POULTRY, INCLUDING DUCKS, GEESE, AND TURKEYS.

The task of awarding the prizes in the Poultry Section was divided amongst the following gentlemen:—Mr. George Faulkner judged the Game fowls, Langshans, and Game Bantams; Mr. John Wilkinson judged the Plymouth Rocks and Orpingtons; Mr. John Wharton judged the Wyandottes; Mr. W. W. Broomhead judged the Minorcas, Leghorns, Dorkings, Sussex, Anconas, Brahmas, Cochins, Campines, French, and Bantams; and Mr. William Bygott judged the Ducks, Geese, and Turkeys.

The *Old English Game* classes were a very fine collection, one of the best seen at the Royal for years. The Spangles were the smallest in numbers, but grand birds headed the classes. The hens were a close thing between first and second. Black Reds were led by a cock of wonderful quality and condition for season of year. The winning cock in the Any other Colour class is a marvel of type and quality, about the best ever seen in this colour. Chicken classes contained some promising youngsters. *Indian Game* were rather disappointing in numbers. Very high class specimens led in the *Modern Game* classes. The prizes were won by a Black Red in cocks, and a Pile in hens. *Langshans* were a grand lot in both classes. The *Bantams (Game)* classes were hotly contested, both in Old English and Modern. The show of *Orpingtons* and *Plymouth Rocks* was the best that has ever been seen at the "Royal." The classes for Buff, Black and White Orpingtons were exceptionally well patronised, while the exhibits for Spangles and Jubilees were of good quality, but not large in numbers.

Mr. Wilkinson considered this the best show (as far as Orpingtons and Plymouth Rocks went) that he had ever seen at the Royal Agricultural Society's Show, and both in numbers and quality they were by far the best he had ever seen at any Show at the time of year.

Minorcas.—There was a good advance in numbers, and nothing was lacking in quality. The entries of *Leghorns* more than doubled those of this breed at last year's show, and the quality of the birds on view was excellent. Last year there were twenty-eight entries in six classes for *Dorkings*, on the present occasion the total was eighteen for two classes, and since most of the noted Dorking yards in the country were represented the specimens were well up to standard. *Sussex*. Thirty-three entries in four classes as against thirty-four in six in 1909 speaks well for the advance made this year, and rarely have better Sussex fowls been exhibited outside Sussex and the adjoining counties. *Anconas*.—There was not as strong an entry of cocks as there might have been, but the hens were good. *Brahmas*.—The entries were just one better than in 1909, so the display was much about the same. The same may be said of *Cochins*, although there were three more entries than in 1909. *Campines* were not as good numerically, but some very nice birds were on view. *Faverolles* were better by five entries, and quality was high. *Malines* came up fairly well for a first attempt. *French*, Any other Variety, were about up to the usual. *Any other Breed*.—The entries and quality were as good as at last year's Show. *Bantams*.—Sebrights mustered well, but there was a somewhat weak display of Brahmas. The Any other Variety classes, however, were particularly strong.

The *Wyandottes* were the finest collection ever seen at the Royal. The classification was better than previously, and the entry would in the Judge's opinion justify the Council in continuing the same. The laced varieties, both old and young, were full of quality. The whites made a grand show, the pick of the lot being the first prize cock, which was as near perfection as any bird the Judge had ever seen. Blacks were strong in number and quality, especially in the old classes. Many of the young birds were raw, owing no doubt to the bad winter that was experienced. Partridges only turned up moderately, but for level quality the Partridge hen class was the best in the section. The Any other Variety classes contained some good old birds, but the 1910 entries were poor.

Aylesbury Ducks were few in number, but the classes contained some very good specimens, especially in the adult class. *Rouens*.—The adults came out in a very strong class of fourteen entries, and about the best Rouens, taking them all

through the class, that have ever been seen at a Royal Show. The prize-winners also in the young class were a splendid lot, and very forward. Of the Any other Variety, Class 454 was a grand collection, the thirteen entries comprising many rare specimens of *Pekins*, *Buff* and *Blue Orpingtons*, *Cayugas*, *East Indian* and *Indian Runners*, &c. The young bird class was a grand one, containing the same varieties, a pair of *Indian Runners* winning first and second, the former being a white drake of rare type and quality. *Geese* were not numerous, but contained splendid birds of both *Toulouse* and *Emblens*. *Turkeys* were a nice show considering the season of the year, many being in the moult. The first prize winners were in fine order.

PRODUCE.

Butter.—The exhibits as a whole were not up to a very high standard as regards quality. A good number of the samples were more or less faulty in flavour, and in texture open and greasy, and contained a high percentage of water. The faulty flavour to some extent might be accounted for by the extremely hot weather generally prevailing at the time of the Show, and under such conditions it is found, in practice, much more difficult to remove the water by working. Class 461 was quite the best in the section. The prize lots were excellent samples being fine in flavour, with good texture and colour, and in appearance neat and attractive. The balance of the exhibits in the butter section were very similar and nothing of outstanding merit was found as regards quality. The appearance of the different exhibits left little to be desired and much credit is due to the makers. Special mention should be made of the first-prize lots in Classes 465 and 466. This was excellent butter and the design and packing very carefully and beautifully done.

Cheese.—**Cheshires**: The quality of the exhibits in Class 470 was very disappointing, and evidently many cheeses had suffered from the excessive heat of the last fortnight. Class 471 was a very heavy one, but the bulk of the cheeses were only of moderate quality, many having been over-heated. The tendency of a large number of the exhibits was to stiffness and lack of quality. Even in the prize-winning lots there was nothing of extra quality. Class 472 was a small one of uncoloured cheeses which was similar in quality to 470. In Class 473 there was a big entry of uncoloured cheeses. The quality of this class generally was better than any of the preceding classes. The Judges regret that they are unable to make a better report, seeing that the Show was held in the centre of an important cheese-making district, but no doubt the general lack of quality was due to the hot weather.

Cheddars: The number of exhibits in Classes 474 and 475 was comparatively small and the quality on the whole can only be described as ordinary. The prize lots in Class 474 were very creditable samples, being clean in flavour, true in colour, with good quality and appearance. A number of the exhibits were rather new and tight made, but taking into consideration the early season of the year the class was quite satisfactory. The Truckles (Class 475) were not so uniform in quality as the previous class, a number of the samples were faulty in flavour and tight made. **Stiltons:** The exhibits in Class 476 were very creditable samples and taking into consideration the early season of the year, might be described as excellent. The Wensleydales made a small class and nothing of outstanding merit was found. The exhibits of Double Gloucester in Class 478 were very irregular and can only be described as common. Class 479 (Staffordshire Cheese), was a small class but the exhibits on the whole were very satisfactory. The first and second prize cheeses were creditable samples. Caerphilly Cheese (Class 480), was a poor class with most of the samples acid and tight made.

Cider and Perry.—These classes, as a whole, were only of fair quality, a fact doubtless due to the inferior character of the fruit, as a result of the sunless summer of 1909. A noticeable and satisfactory feature of the section was the total absence of preservatives in the exhibits, not a single entry having to be disqualified on account of their use. Dealing with the individual classes, that for dry cider in cask, made in 1909, was poor, as a whole, and included several entries of sweet ciders. Both in this and other classes for *dry* cider and perry, some exhibitors showed little discrimination between the *sweet* and *dry* types in selecting their entries, and in a number of instances, exhibits which would have deserved mention in the corresponding *sweet* class were entered in a *dry* class. The class for sweet cider in cask, made in 1909, was a fair one, but contained no cider of particular merit. The class for cider in cask, made previous to 1909, was weak, numerically and in quality. In the classes for bottled cider, that for dry cider, made in 1909, was moderate, but that for sweet cider, made in the same year, was good, and included several very nice samples. In both of these classes, the excellent condition of the ciders deserves commendation. The quality in the bottled class for old cider was mixed, several of the ciders being very good and the remainder poor. Only one award was made in the class for dry perry, the other exhibits being mostly either too sweet or showing evidence of added spirit. The class for sweet perry was the strongest in the section, most entries being very good, and the prize winners excellent.

Below are given particulars of the chemical analyses of the samples for which prizes were awarded:—

CLASS 481.—*Cask of Dry Cider, not less than 18 and not more than 30 gallons, made in 1909.*

No.	Specific gravity	Alcohol	Solids	Acidity	Awards
		per cent.	per cent.	per cent.	
384	1·0180	3·60	5·72	·50	1st Prize
381	1·0150	4·30	5·35	·37	2nd Prize

CLASS 482.—*Cask of Sweet Cider, not less than 18 and not more than 30 gallons, made in 1909.*

394	1·0377	2·80	10·43	·50	1st Prize
390	1·0247	3·30	7·44	·33	2nd Prize
395	1·0320	3·20	8·98	·47	3rd Prize

CLASS 483.—*Cask of Cider, not less than 18 and not more than 30 gallons, made previous to 1909.*

401	1·0222	3·40	6·98	·40	1st Prize
-----	--------	------	------	-----	-----------

CLASS 484.—*One Dozen Dry Cider, made in 1909.*

414	1·0157	4·60	5·51	·37	1st Prize
413	1·0144	5·20	5·42	·44	2nd Prize
405	1·0150	4·60	5·27	·37	3rd Prize

CLASS 485.—*One Dozen Sweet Cider, made in 1909.*

425	1·0362	1·80	9·39	·60	1st Prize and Challenge Cup
416	1·0290	2·00	8·33	·46	2nd Prize
418	1·0305	2·50	8·76	·34	3rd Prize

CLASS 486.—*One Dozen Cider, made previous to 1909.*

438	1·0299	4·00	8·96	·45	1st Prize and Reserve for Cup
437	1·0301	2·70	8·48	·39	2nd Prize
441	1·0296	3·40	8·72	·33	3rd Prize

CLASS 487.—*One Dozen Dry Perry.*

444	1·0109	5·25	4·60	·33	3rd Prize
-----	--------	------	------	-----	-----------

CLASS 488.—*One Dozen Sweet Perry.*

No	Specific gravity	Alcohol	Total solids	Acidity	Awards
		per cent	per cent	per cent	
458	1.0387	2.55	10.80	48	1st Prize
459	1.0391	2.60	10.94	47	2nd Prize
453	1.0460	2.10	12.51	74	3rd Prize

Wool.—Taking the exhibits as a whole, they were exceedingly good, and most classes were well represented. At the same time the Lincoln, Southdown, Cheviot, and Scotch classes are deserving of better support at the hands of home sheep breeders, all these wools being very useful to the trade. Competition was the keenest in the Kent or Romney Marsh, Shropshire, and Welsh classes. The Judges wish specially to draw attention to the use of string or cord in tying up the fleeces. Several of the lots shown were tied in this way, and the custom is very prevalent in Dorset, Somerset, and Devonshire. This is a most objectionable custom, and if it can be stopped in any way a very good service will be done to users of wool generally. Apart from the fact that the string has to be paid for at the same price as the wool, there is a great objection by the whole of the trade to its use on account of the risk of bits getting in with the wool, passing through the various processes of manufacture, and afterwards appearing in the finished product. A wool band made from each fleece should be wrapped round instead of string.

Hives, Honey, and Bee Appliances.—The judging in this department of the Royal Show was carried out by Messrs. Reid, Taylor, and Eales. Having regard to the early date at which this Show is held, from the bee-keeper's point of view, to the lateness of the present season, and to the poorness of last year's honey harvest, the quality of the honey exhibited was quite up to the average, though the quantity shown was smaller than at Gloucester. There was a large entry of excellent hives suitable to all purses and purposes, some of the larger ones being very highly finished products of the joiner's art. No less than six stands were crowded with the latest bee appliances, British and foreign. The numerous medicinal uses to which honey can be put were exemplified in a striking manner by the neat and compact exhibit of a chemist and bee-keeper who resides in the county of Lancashire. In the trophy class the competition was most keen, the first award falling to a really artistic display by the same exhibitor. The number of novelties exhibited, though small, comprised the largest bee appliance in this section of the show, viz., a

six-frame Cowan Extractor, worked by a petrol engine. The frames were reversible without stoppage of the extractor.

Butter-making.—There were over forty competitors, who were divided into three sections, and the prize winners in each section competed on the last day of the Show for the Champion prize. The conditions of entry precluded any one from competing who had at any past Show received a prize in an open class. This condition lowered the standard of work which was performed, but on the other hand gave great encouragement to competitors who were in a large measure beginners. Keeping this in view the practical work was done in a creditable manner.

Horse-shoeing.—Mr. Anstey, one of the Judges of the competition, reports that “the work was exceedingly good, especially considering the bad feet in the cart horse class, the wretched method of shoeing and the mutilation of the feet in Liverpool being the worst in my experience. The chief cause of failure in all classes was in the preparation of the foot for the shoe. In my address to the competitors I called special attention to this and hope to see some improvement in this feature in the future. In the public lecture in the Showyard I felt I could not do better (from the examples of mutilated feet in the cart horse class) than deal with the evil effects of ‘toe and heel shoeing.’ In conclusion, I may add that in my opinion the competitions are doing much to effect improved workmanship, and the addition of the roadster class was very popular.”

Horticultural Exhibition.—The beautiful display of flowers, fruit, and vegetables, was again of the highest excellence, and was for the first time organised by the Royal Agricultural Society itself, with the assistance of the following local representatives:—Sir W. B. Forwood, Mr. Alderman H. Watts, and Mr. A. A. Paton. The Exhibition was visited by His Royal Highness Prince Arthur of Connaught on Wednesday, June 22, and His Royal Highness's expression of pleasure would doubtless be endorsed by the great number of visitors to this interesting and instructive section of the Show.

THOMAS MURROW.

16, Bedford Square.
London, W.C.

TRIALS OF AGRICULTURAL MOTORS

AT

MANOR FARM, BYGRAVE, BALDOCK, HERTFORDSHIRE,

AUGUST, 1910.

Judges: { W. WORBY BEAUMONT, M.Inst.C.E., M.I.M.E., Outer
Temple, 222, Strand, London, W.C.
R. J. BAYNTON HIPPEISLEY, Ston Easton Park, near Bath.

The Society decided early in 1909 to offer a gold medal for the best Agricultural Motor to be presented for trial in 1910. The agricultural motor intended to be the subject of the trials was described as "any form of Motor using either Steam, Oil, Petrol, or Electricity as its motive power, which—

- (a) Shall be capable of hauling direct in work a Plough, Cultivator, Harvester, or other Agricultural Implement.
- (b) Shall be capable of driving such Agricultural Machines as a Threshing Machine, Chaff Cutter, Grist Mill, etc.
- (c) Shall be capable of hauling a load along a road and on the land."

These trials may be looked upon as supplementing the trials of self-moving vehicles carried out by the Society at Manchester in 1897, and at Birmingham in 1898, and it must be noted that the trials carried out at Bygrave in August last were more especially intended to ascertain the capability of tractors for field work by motors which should also be capable of the ordinary work of a prime mover.

For the purposes of the trials it was necessary to obtain a considerable area of land which would offer the same haulage resistance to ploughs to be pulled by all the tractors in competition, and land on which the areas to be reaped might be approximately the same as to levels and gradients for the reaping machines to be hauled by all the tractors. These requirements were found to be eminently satisfied by the land on the Manor Farm, placed at the disposal of the Society by Mr. O. Edward E. Cooke, at Bygrave, near Baldock, Herts, and by whom, and

Mr. Vincent, his steward, very great assistance was given in the arrangements made for the field operations, for the storage of the tractors and wagons, and for the various kinds of work that had to be provided for in connection with the trial.

The plans herewith (Figs. 1 and 8) show the site of the nine five-acre plots, 506 yards long, which were laid out for ploughing. Seven of these were ploughed by the tractors, the names of which are on the plan (Fig. 1), the ploughs used being the Howard three-furrow ploughs. Here it should be mentioned that the trials of the motors, tested by hauling ploughs, was a trial of the tractors and not a plough trial. The character of the ploughing was observed as to depth, width, and equality of the ploughing as affected by the ploughman, by the speed, by the regularity of haulage, and the trial was in no sense a ploughing match trial, but only intended as a means of comparing the relative performance of the different tractors.

The land ploughed was seed land mown and eaten off by sheep.

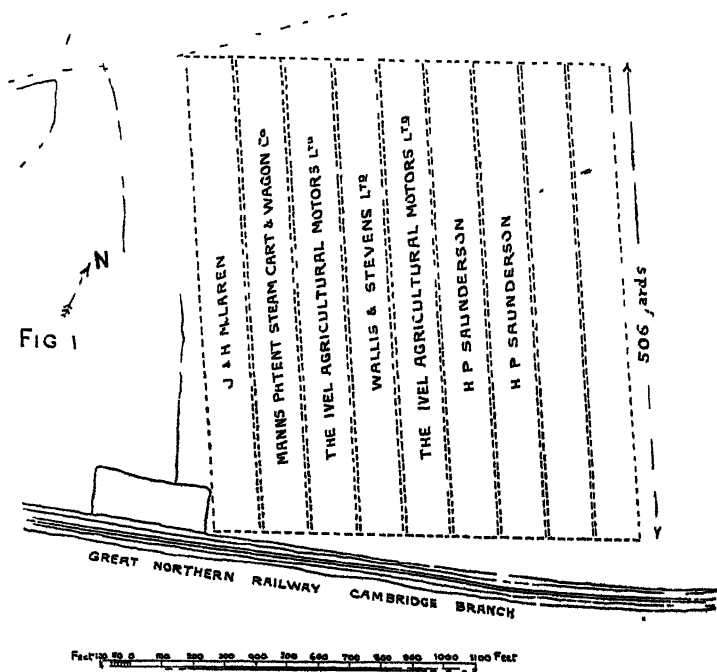


FIG. 1.—PLAN OF PLOUGHING PLOTS.

In response to the invitation of the Society eleven entries were made by six entrants, and of these eleven entries, seven were presented and went through the trials. The seven so present were as follows:—

(1) J. and H. McLaren, Midland Engine Works, Leeds. A steam tractor of the agricultural locomotive type, but with compound engine and super-heater for working with dry steam, and with road wheels fitted with detachable rings for working on soft ground.

The general construction as to type of this tractor may be gathered from the annexed illustration (Fig. 2).

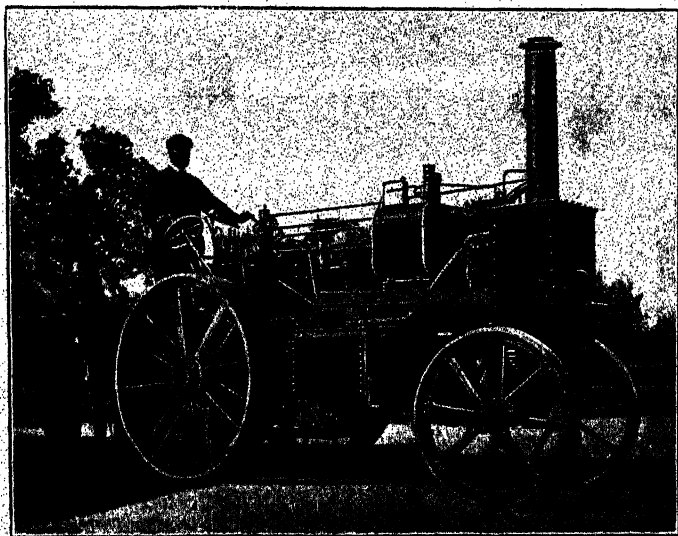


FIG. 2.—J. & H. MCLAREN'S 5-TON COMPOUND STEAM AGRICULTURAL MOTOR, MOUNTED ON SPRINGS TO BACK AND FRONT WHEELS. WINDING DRUM AND SUPERHEATER FOR STEAM IN SMOKE BOX. THREE SPEEDS.

The following are the leading particulars of the engines:—
Net weight, 4 tons 19 cwt. 3 qrs.

Engine cylinders—high pressure, $4\frac{1}{2}$ in. diam. by $8\frac{1}{2}$ in. stroke;
low pressure, $7\frac{1}{2}$ in. diam. by $8\frac{1}{2}$ in. stroke.

Steam pressure, 200 lb.

Travelling wheels—rear driving, 3 ft. dia. by 1 ft. wide; front, 3 ft. 6 in. diam. by 6 in. wide.

Over-all dimensions, 14 ft. 5 in. by 5 ft. 9 in.

Total tank capacity, 155 gallons.

Coal bunker, 4 cwt. approximately.

Heating surface, 67 sq. ft., not including super-heater.

Grate area, 3 sq. ft.

Three speeds, 2, 2.56 and 5 miles per hour at 314 revs. of engine.

(2) The Mann's Patent Steam Cart and Wagon Company, Limited, Pepper Road Works, Hunslet, Leeds. A steam tractor (Fig. 3) of new design, the hind part of which was carried on two broad wheels, constituting a wide roller over which was a large saddle form water tank.

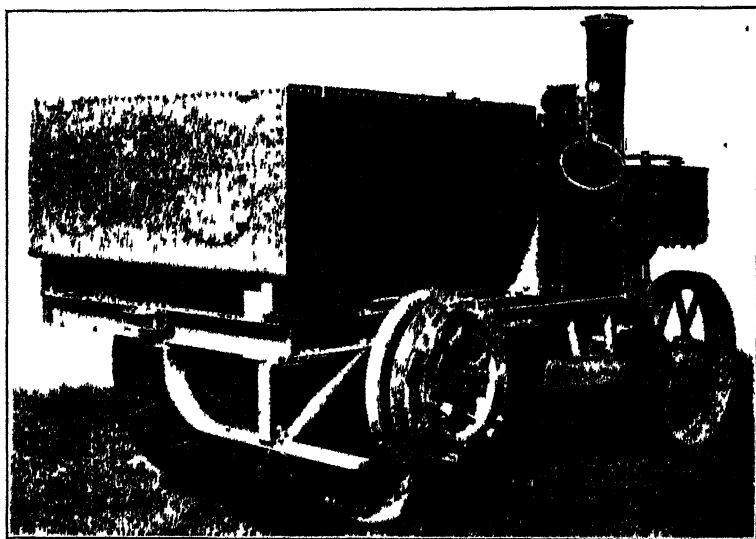


FIG. 3.—MANN'S STEAM CART & WAGON CO.'S AGRICULTURAL TRACTOR, WITH TRUCK BODY ON FRAME AND EXTRA WIDE REAR WHEELS. TWO SPEEDS.

Net weight, 4 tons 13 cwt.

Engine cylinders—high pressure, 4 in. diam.; low pressure, 6½ in. diam. by 7 in. stroke.

Travelling wheels—rear driving, 4 ft. diam. by 1 ft. 8½ in. wide ; front, 3 ft. 1 in. diam. by 7 in. wide.

Over-all dimensions, 12 ft. 6 in. by 6 ft.

Total tank capacity, 200 gallons.

Heating surface, 64 sq. ft.

Grate area, 2.8 sq. ft.

Two speeds, 2½ and 5 miles per hour.

Steam, 180 lb.

(3) Wallis and Stevens, Limited, North Hants. Iron Works, Basingstoke. A compound steam tractor of the road locomotive type (Fig. 4).

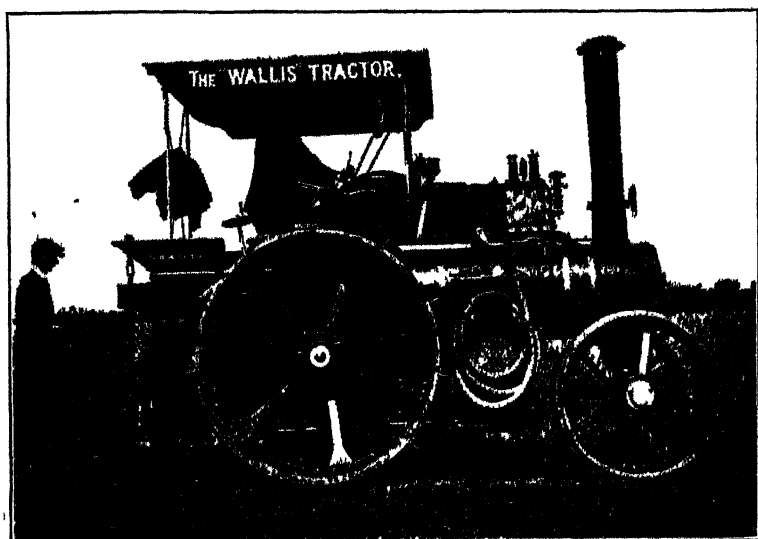


FIG. 4.—WALLIS & STEEVENS' COMPOUND STEAM TRACTOR, MOUNTED ON SPRINGS, ENGINE PARTS ENCLOSED AND RUNNING IN OIL BATH. FAST AND SLOW SPEEDS.

Net weight, 4 tons 19 cwt. 3 qrs.

Engine cylinders—high pressure, 4½ in. diam. by 9 in. stroke ; low pressure, 8½ in. diam. by 9 in. stroke.

Travelling wheels—rear driving, 4 ft. 11½ in. diam. by 1 ft. 4 in. ; front, 3 ft. 3½ in. diam. by 6 in.

Over-all dimensions, 13 ft. by 6 ft. 4½ in.

Total tank capacity, 159½ gallons.

Coal bunker, 3 cwt.

Steam pressure, 160 lb.

(4) Ivel Agricultural Motors, Limited, 46, Poland Street, London, W. (Single gear). Fig. 5.—One 18-20 h.p. petrol engine agricultural motor running on three wheels and with only one speed of movement, a low speed.



FIG. 5.—THE "IVEL" AGRICULTURAL MOTOR, WITH THREE WHEELS. SINGLE SPEED. TO WORK WITH EITHER PARAFFIN OR PETROL.

Net weight, 1 ton 14½ cwt.

Engine cylinders, 6½ in. by 5 in. stroke.

Travelling wheels, rear driving, 40 in. diam. by 9 in. wide; front, 20 in. diam. by 7½ in.

Over-all dimensions, 5 ft. 4 in. by 9 ft. 9 in.

Oil tanks, large 6 gallons; small 2 gallons.

Water tank, 44 gallons.

(5) Ivel Agricultural Motors, Ltd. (Double gear). 18-20 engine of similar make, also on a three-wheel carriage, but provided with two speeds of running, both these engines being arranged to work with paraffin as well as petrol.

(6) H. P. Saunderson, Elstow Works, Bedford. A four cylinder 45-50 h.p. petrol and oil engine agricultural motor. Fig. 6.

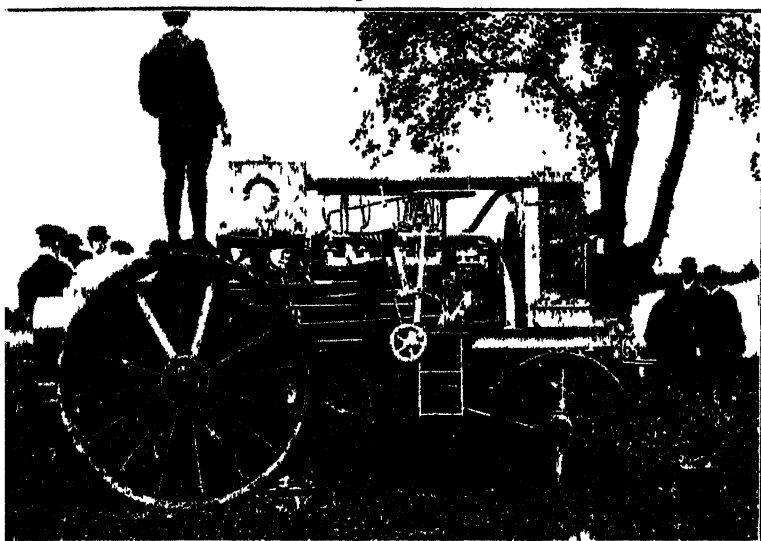


FIG. 6.—SAUNDERSON'S 45-50 B.H.P. "UNIVERSAL" OIL MOTOR, MOUNTED ON SPRINGS. THREE SPEEDS. TO WORK WITH EITHER PARAFFIN OR PETROL.

Net weight, 4 tons 13 cwt.

Engine, 4 cylinders 6 in. diam. by 8 in. stroke.

Travelling wheels, rear driving, 5 ft. diam. by 12 in. wide; front, 3 ft. 6 in. diam. by 6 in. wide.

Over-all dimensions, 7 ft. 1½ in. by 13 ft. 3 in.

Oil tanks, large, 38 gallons; small, 8 gallons.

Water tank, 24 gallons.

Three speeds, approximately 2½, 3½, and 6 miles per hour.

(7) H. P. Saunderson. A similar four cylinder 25-30 h.p. petrol engine agricultural motor, also arranged for working with paraffin oil as well as with paraffin.

Net weight, 3 tons 11½ cwt.

Engine, 4 cylinders, 5 in. diam. by 6½ in. stroke.

Travelling wheels, rear driving, 4 ft. by 10 in. wide; front, 3 ft. by 6 in. wide.

Over-all dimensions, 6 ft. 7 in. by 12 ft. 5 in.

Oil tanks, large, 26 gallons; small, 6½ gallons.

Water tank, 26 gallons.

The fuel consumption of all these motors is given in the report of the consulting engineer, Mr. F. S. Courtney.

It is unnecessary to reproduce these here, but in passing it may be noticed that the relative costs of supply in the field of fuel and water to the most economical steam engine and to that of the most economical internal combustion engine were respectively as shown in table

The trials commenced on Tuesday, August 9th, with the ploughing of the field shown in Fig 1, each tractor working on a five acre plot, and ploughing on an average 5 in in depth with the three furrow plough which is sufficiently illustrated by Fig 7

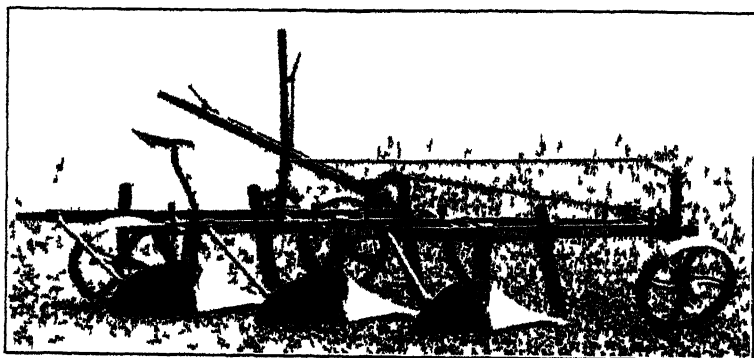


FIG 7—THREE-FURROW PLOUGH USED IN TRIALS

The plough was fitted with high breast and to turn 9 in furrows, and was well suited for working the land, which was what would be considered light land and in a fairly dry condition, but in which the use of a somewhat wider share would have been an advantage. Although light land it was not of the kindest description, and at 5 in depth the bed of the furrow was either in or very close to a chalk bottom. The conditions were, however, practically the same throughout the field.

Table 2, page 196, of Mr Courtney's Report, gives a summary of the figures relating to the different motors in this ploughing contest from which may be seen the time occupied in ploughing each of the plots, the fuel and water consumed, the average speed of the plough, which, it may be here remarked, includes the time of turning at the headlands, and the full cost per acre ploughed. The average speed of the ploughing bore little relation to the maximum speed, and, indeed, would be difficult to assign,

NOTE—Illustrations Nos 2, 3, 4, 6 and 7 appeared in the *Implement and Machinery Review*, and the Blocks have been kindly lent by the publisher, Mr Harry Westcott

because the time occupied in the headlands varied considerably as the plot ploughed became wider; but it may be mentioned that the speed of ploughing in the case of, for example, the McLaren tractor was sometimes considerably more than five miles per hour, at which speed the land in the dryer parts was much broken up and roughly laid over.

This ploughing was not so pretty to look at immediately afterwards, but the disintegrated condition would in some lands be advantageous.

The measured area of ploughing having been completed, and other intermediate trials made, the ploughs were taken to a second field at a distance of about a quarter of a mile where the land was of a heavy and very tough description, closely overlying a chalk bottom. Here the tractors were tested by ploughing to a depth varying from 4½ in. to 7 in. and on an average from 9½ in. to 10 in. in width per furrow. The work in this field was a heavy test, although not so difficult as if the land had been in a wet condition. The McLaren engine, for example, ran over this land with fully as much speed as the ploughs could withstand.

The Mann's tractor was not so fully the master of the work in this field, but both it and the Wallis and Steevens' engine accomplished the work without apparent material damage to the land by pressure upon it.

The Ivel tractor with two-speed gear was also taken into this heavy land, but it was found that the three-furrow plough was more than this rather high-gearred motor could manage, and the slower-gearred single-speed tractor was therefore put in its place, and this succeeded in hauling the plough; but the draw-bar pull lifted the front wheel off the land so much that it was difficult to steer, and the ploughing consequently difficult.

The Saunderson tractor, entered as 45-50 b.h.p., was also taken into this field, and evidently would have been quite capable of doing the work if its engine had been in good working order. Owing, however, to hasty completion and the insufficient time for shop and road trials, it was really doing its experimental tuning up and getting into order in the trial field, and, whatever its merits, this was an injudiciously chosen time for these experiments.

On each of the plots of land ploughed a sample of the soil one yard square, moved to the depth of the pan, was taken and weighed. Table No. 1 gives a summary of the weight of these samples. From the plough dynamometer is obtained the mean draught of each of the ploughs, so that the amount of work done

per pound of earth raised or moved is obtained, and this is given in the second last column of Table No. 1.

The diagrams Nos. 1 to 4 (Fig. 9) show the maximum and minimum draw-bar pull or draught of the plough as hauled by each of the different tractors, but diagram No. 5 on same page gives the draw-bar pull by the McLaren engine on the heavy land, and, while showing the enormous difference between the toughness of the heavy land and of the light land of the field, it also shows the great variation in the draw-bar pull in different parts at somewhat varying speeds.

The wheels of all the steam tractors ran on the land which they afterwards ploughed, but the furrow side driving-wheel of the Ivel tractor ran in the bottom of the last ploughed furrow. In most cases, however, the weight of this tractor is insufficient to do any damage to the seed bed.

After the ploughing of the five-acre plots, the tractors were taken to a field of wheat about half a mile from the ploughed land, and there each one was attached to two Harrison McGregor 6 ft. knife-bar, sheaf-delivery, string-binding reapers, the headlands and a lane having been already cut by hand to permit passage of the tractor. The general lie of the land was the same for all the field, which was one of about eighty acres, with an easy down gradient to half its length and slight upward gradient the other half; but, on the whole, it was what would be considered fairly easy work, and the land was in nice condition as to dryness.

All the tractors, with the exception of the two-speed Ivel, were put on to these machines. The Ivel, after a short period, only hauled one machine.

This work was, as in the case of the light land ploughing, only play for the steam tractors, especially the McLaren tractor, and the measure of the ease or otherwise with which the different tractors could perform this work may be gathered by reference to the brake h.p. of the different engines when tested on the friction dynamometer. A table of the results of these tests will be found on page 197 in Mr. Courtney's Report. An estimate so formed, however, can only be approximate, as the difference in the transmission efficiency of the different engines is considerable. Although opinions varied considerably as to the ploughing done by the different tractors, there was very little difference of opinion as to the reaping done, some of which would have been done more expeditiously if the tractor drivers had been more accustomed to the manœuvring of the combination of tractor and reaping machine.

As each of the tractors completed either its ploughing trial or its reaping trial, it took its place in driving the friction-brake dynamometer, by which its power was ascertained, the dynamometer taking the place of, or representing the driving of, a threshing machine or other machinery.

It was not considered necessary by the judges to make indicator experiments with the engine, although mean pressure observations in the petrol and oil engine cylinders were taken. The results of the brake dynamometer trials are given in the table already referred to, from which it will be seen that the 15 to 16 B.H.P. required for a threshing machine of either 54 in. or 60 in. drum measurement was easily given off by the steam engines, and the power of the McLaren engine was far in excess of the requirements for this part of the work. The petrol and oil engines, however, in all cases showed themselves to be of considerably under the nominal power given in the entry list, and in some cases it was found undesirable to pursue this test for the length of time at first intended.

There were none of them capable of running continuously on paraffin or heavy oil, and the Ivel engines showed themselves also deficient in constructive details, as, for example, in the bearing next the pulley for driving threshing or other machines, this bearing showing, in fact, a disregard of the power it would have to transmit.

The ploughing, reaping, and machine driving trials having been completed, the road trials were then entered upon, the tractors hauling loads varying from 3 tons by the Ivel motors, to 8 tons 12 cwt., the several loads being given in Table No. 5. All passed over the same road, which is shown by the map, Fig. 8. All covered this route twice, hauling their loads in tractor wagons lent by Messrs. Aveling and Porter. The route included about eight miles of fairly level roads, including the Icknield way, which is of good surface, the remaining four miles consisting of roads of varying surface and narrow, the worst of which was on the approach to Bygrave from the Icknield way, on which is a gradient of about one in twenty.

Two arrows on the map give the course followed by the tractors. The whole of the tractors went through these trials, all the steam vehicles and the Ivel vehicles with complete success, but some little difficulties arose with the Saunderson 25-30 h.p. vehicle, apparently resulting from the hurried completion of the engines.

The time taken in making these journeys, fuel consumed, and other figures relating to this part of the trial will be found in Table No. 5 given in the Consulting Engineer's Report.

From the description of the reaper trials, it will be found that two reaping machines, each with a 6 ft. cutter, can be hauled by a steam tractor, of the kinds tested in the trials, at a speed which is as high or higher than the machines and binder strings can stand.

The more powerful oil and petrol tractors can also haul at such speeds, and the smaller tractor successfully hauled one 6 ft. reaper at what may be called a full speed for such machines.

The speed at which ploughing can be done by steam tractors was not a quantity which the trials were primarily intended to ascertain, and the different forms of tractors entered would have made useful comparison difficult in this respect. The steam tractors could all have ploughed more furrows at about the pace they moved the three-furrow plough. The little single-gear Ivel tractor, however, the engine of which gave an average of 6.65 horse power on the brake, hauled the three-furrow plough, and on a long five-acre plot ploughed 0.74 acres per hour.

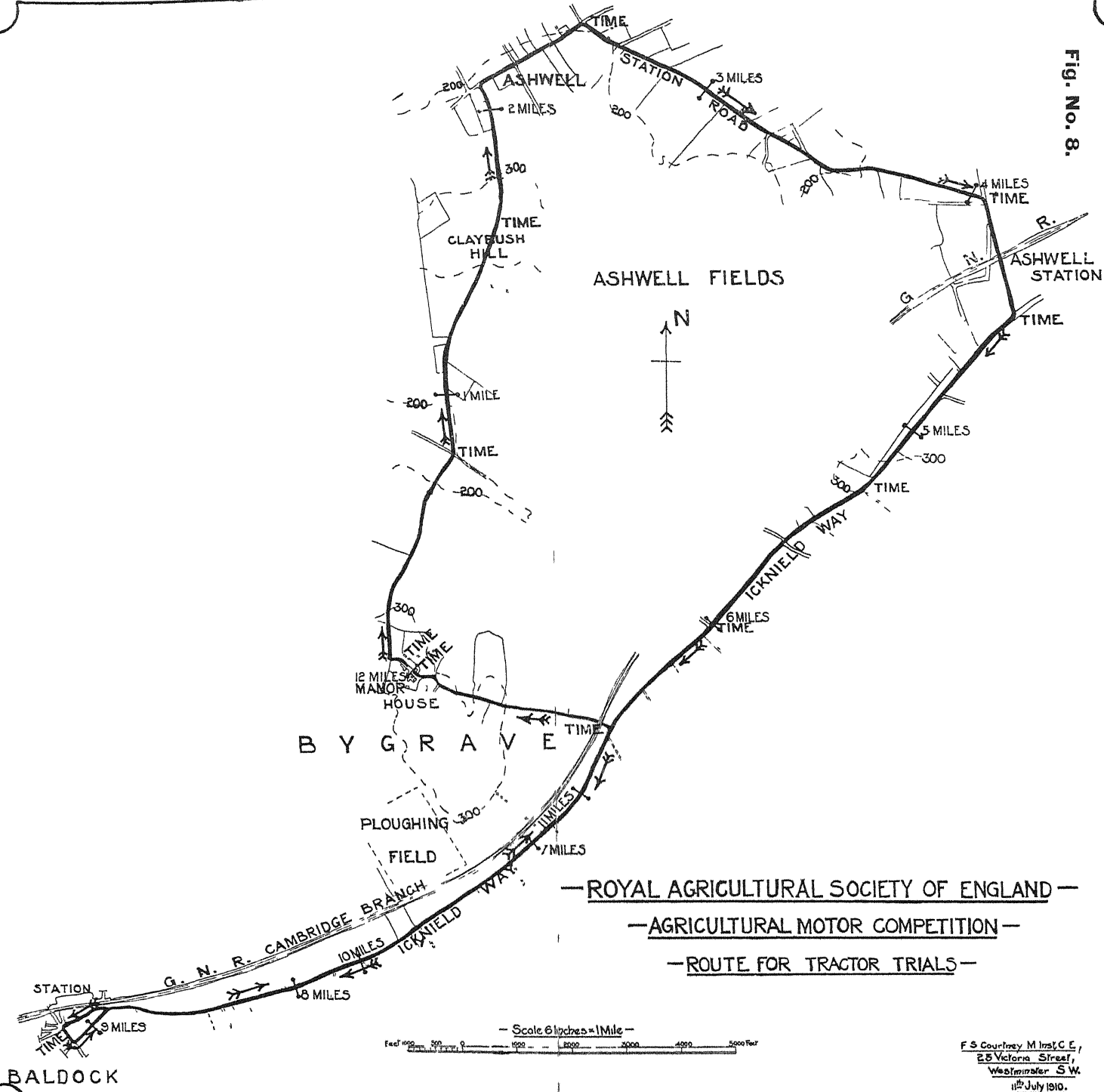
On the road there was, even before the trials, no question as to what the steam tractors could do. The oil tractors, being of very different powers and weights, make comparison of their capabilities and usefulness again difficult, and especially so with regard to their general employment for average farm purposes. It is obvious that for many farm purposes the larger powers are not required either on the land, in the yard, or buildings, and even on the road the smaller tractors will haul a considerable and often quite sufficient load.

The steam engines best fulfilled the requirements of the trials, but there can be little doubt that the oil engine will ultimately best suit the farmer's requirements if a general purpose motor tractor is to be adopted for the average farm, and unless the work be split up in future as it is now, between the small motor for farmyard and farmstead work, and the more powerful tractor for the heavy traction and field work, as now run by those who make a business of hiring out.

Judging by their relative performances and by their capabilities as shown during the trials and not judging by the future improvements, which are of ready conception, in the petrol and oil tractors as shown in the trials, the judges were without hesitation led to the conclusion that the conditions as provided in the regulations, and the requirements from a practical point of view were best fulfilled by the McLaren tractor.

The trials show that under moderately favourable conditions, a small oil tractor can haul a three-furrow plough or a reaper,

Fig. No. 8.



A line graph showing the variation of the rate of change of the magnetic field with distance. The vertical axis is labeled "Rate of change of magnetic field" and ranges from 0 to 150. The horizontal axis is labeled "Distance" and ranges from 0 to 1000 yards. The data is plotted as a jagged line fluctuating between approximately 50 and 100 units.

Figure 1 is a line graph showing the variation of the ratio of the maximum to the minimum value of the normalized vertical displacement, W_{max}/W_{min} , as a function of the normalized horizontal distance, x/B . The y-axis is labeled W_{max}/W_{min} and ranges from 0 to 15 in increments of 5. The x-axis is labeled x/B and ranges from 0 to 1200 yards in increments of 100. The data is represented by a highly fluctuating line that generally stays between 5 and 10, with a slight downward trend as x/B increases.

Maximum Pull on Drawbar	...	...	...	12 cwts. 2 qrs
Minimum " "	...	...	...	2 "
Average " "	...	...	...	7 "

Maximum Pull on Drawbar	...	...	...	10 cwt. 2 qr.
Minimum	"	"	...	2 "
Average	"	"	...	7 " and 6 1/2 cwt.

Ivel Agricultural Motors, Ltd. (single and double-gear Motors).					
Maximum Pull on Draw bar	...	...	...	...	13 cwt.
Minimum " "	...	...	...	...	3 "
Average " "	...	...	...	...	8 "

Maximum Pull on Drawbar	...	...	...	...	13 cwt.
Minimum	"	"	...	...	4 "
Average	"	"	...	...	8 "

Maximum Pull on Drawbar	...	...	...	...	2 tons 18 cwt.
Minimum " "	...	...	...	...	16 cwt.
Average " "	...	...	...	...	1 ton 15 cwt.

Measure A1-HK100	Home Point Stewart Carl W. Meyer CH	Measure A1-HK100	The Incl Agricultural Makers LVE single gear	The Incl Agricultural Makers LVE double gear	ALPS numbers 45-50BAP	ALPS numbers 45-50 BAP

Heavy Land.

Weight of soil //////// 571 lb
per sq. yard, ploughed 7 in. deep.

Fig. No. 9

**PLANS SHOWING CHARTS TAKEN BY DYNAMOMETER
ON LIGHT AND HEAVY PLOUGHING LANDS.**

No. 6.—Chart showing weight of soil per sq. yard ploughed.

and can haul a gross load (load and trailer) of about 3½ tons, on average country roads, and that the larger oil tractor can haul loads fully up to the maximum requirements.

Although the three types of steam tractors and two types of oil-engine tractors presented for trial accomplished the tasks set for them as herein described, and although the judges considered that the work done by the steam engines was satisfactory as far as merely doing the test work is concerned, they were unable to recognise in any of them the agricultural motor which is hoped for as the ideal general-purpose tractor and engine for farm purposes.

Though unable to specify the ideal agricultural motor, the judges are of opinion that the trials will prove useful as providing the experience which, if fully utilised, may lead to such a motor; one which, while not being heavy, will be capable of so much of the tractor work as may enable the farmer to dispense with the hiring of the traction engine, will perform enough of the field work and will be capable of doing any of the work for which an engine is required on a farm.

In concluding this Report, we wish to record our appreciation of the assistance given by the Steward of Implements, Mr. C. M. S. Pilkington, and by the Society's Consulting Engineer, Mr. F. S. Courtney; we desire also to record our thanks to Mr. C. Edward E. Cooke, of the Manor Farm, Bygrave, for the admirable arrangements made by him and his staff, and the assistance they gave throughout the trials at the homestead and on the land, assistance which more than usually facilitated the work to be done.

W. WORBY BEAUMONT.

R. J. BAYNTON HIPPISELY.

NOTES BY THE CONSULTING ENGINEER ON THE TRIALS OF AGRICULTURAL MOTORS.

It will enable the reader of the Report on these trials the better to appreciate it, if the conditions under which they were conducted, and how the figures were arrived at, are set out.

In order to ensure a satisfactory comparison of the work done by the several Motors to be made, it was decided to use precisely similar ploughs in all the trials. For which purpose Messrs. J. and F. Howard lent four of their well known three-

furrow ploughs and placed three ploughmen thoroughly experienced in their use at the disposal of the Society. This arrangement was generally welcomed by the several competitors.

It was further essential that there should be as little difference as possible between any of the plots which the motors would have to work. The field in which the trials took place was carefully measured up and levelled, and it was fortunately possible to set out five-acre plots for each which were to all intents and purposes exactly similar. (See Figs. 1 and 8.)

The depth of ploughing had to be regulated by the nature of the ground, and this was fixed at 5 inches for all competitors, so as not to disturb the chalk subsoil.

As the three ploughs used were identical, and as we were not testing the ploughs themselves, it was obviously unnecessary to make a dynamometer test of each, but in order to ascertain whether there was any material difference in the nature of the ground, tests were made with the same plough and engine on the land left unploughed between the plots. The results obtained are shown in the dynamometer chart (Fig. 9), which is a reproduction of the actual diagrams recorded by the dynamometer.

If the first four diagrams are compared, it will be noticed that Nos. 1 and 3 present a slightly increasing draught from left to right, while in Nos. 2 and 4 the reverse takes place to a very similar degree. This corresponds with the undulation of the land and is incidentally evidence of the correctness of the record.

Comparing these four diagrams it will be noticed that the draught in the lower portion of the field is more than on the upper part, the ground being caked harder, though as compared with diagram No. 5, which was taken subsequently in heavy land, the differences are relatively small.

For further comparison, the weight of ground actually moved by the motor during the trial was ascertained by weighing two or more samples of earth one yard square on each plot, the mean of these weights is given in Table 1. The difference in these weights is to a considerable extent due to the way in which the ploughing had been effected. Owing to the difference of level of the draw-bar adopted by different competitors and to other causes, it was found more difficult to maintain a uniform depth of furrow and level pan in some instances than in others.

The trials were to have been commenced at 9 a.m. on the Tuesday morning, but it was 11 o'clock before a start could be made. The delay was in no way due to want of preparation or

delay on the part of competitors, the weather alone was responsible for the delay. The rain which had fallen was not in any way sufficient to affect the results; the ground dried very quickly, and during the remaining days of the trial there was no interruption whatever.

The trial of two steam motors and one oil motor on the five-acre plots were completed on the first day, and fully occupied the attention of the judges.

On the second day (Wednesday) the remaining steam motor and three oil motors were tried, and this concluded the ploughing trials in light land.

During the trials each motor was in charge of an observer who recorded the fuel and water consumption, time taken and any incident of the trial, the results of which are summarized in Table No. 2.

The cost of ploughing five acres of land at Baldock is set out in Table 4. In this, however, no charge is made for maintenance, depreciation, or interest on capital.

The amounts to be charged under these heads against ploughing would obviously vary in accordance with the proportion of such work compared with other work done by the motor.

On the following Saturday and on Monday morning, further ploughing trials in heavy land were made in order to test the full capabilities of the motors. No measurement of fuel consumption in these trials was made, as, owing to the varying amount of work done by the motors, consequent upon the difference in their power, no comparison was possible, and any such measurements would have been useless: that the land ploughed was "heavy land" is sufficiently evidenced by the dynamometer diagram No. 5, Fig. No. 9.

HARVESTING TRIALS.

On Thursday the several motors were taken to a field of wheat which had previously been opened up, so as to provide two plots for the machines. Four "Albion" Self-binding reapers with 6-foot knives were provided by Messrs. Harrison McGregor & Co. The larger motors with ease worked two of these, the smaller worked one.

This work being so very much less for the motors than that done previously in ploughing, it resolved itself into a demonstration as to how a motor with one or more harvesters attached thereto could negotiate the corners and irregularities in the field, and, in such a trial, expertness in the driver is the main factor.

TRACTION TRIALS.

The traction trials were commenced on Friday. A circuitous route of 12 miles had been laid out, providing, as far as the locality would permit, variable conditions.

Fig. No. 8 is a reduction from the 6-inch ordnance map of the course, and from the dotted contour lines shown thereon, it will be seen that there were some fairly long and steep gradients, and though, throughout most of its length, good roads prevailed, there were stretches of by-road and cart-road which, had the weather been a little less favourable, would have presented very considerable difficulties for some of the motors. As it happened, however, the course could not have been in much better condition; the trial, therefore, was not a severe one though it fully answered its purpose.

Two trailer trucks were lent by Messrs. Aveling & Porter, and each competitor declared before starting what load he would convey twice round the course, a distance of 24 miles.

The motors were despatched at intervals, each being in charge of an observer, who—in order to ensure uniformity of observation—was provided with a copy of the map of the course and a previously prepared log sheet on which he recorded the load hauled, fuel and water consumption, the time occupied on the several sections of the route, etc. The results of such observations are summarised in Table No. 5.

BRAKE TRIALS.

In order to test the relative powers of the several motors more accurately than could be done by ploughing, they were all—with one exception—tested on a dynamometer brake, similar in principle to the rope brake used in former oil and gas engine trials, excepting that instead of having the brake directly on the fly-wheel of the engine, in this instance two brakes were mounted on a countershaft running at about 1,000 revolutions per minute, which the engine drove by means of a belt. Each engine had to place itself in position, and to drive this countershaft just as it would if driving a threshing machine.

A record was kept of the horse-power developed. The fuel and water consumption and the results are given in Table No. 3. It will be noticed that the coal consumption is given at per brake horse power per hour, whereas the oil is given in gallons per brake horse power throughout the trial; one of these engines not having completed an hour's run.

25 Victoria Street,
Westminster, S.W.

F. S. COURTNEY,
M.Inst.C.E.

Table No. 1.—SUMMARY OF DYNAMOMETER TRIALS.

Name of Competitor	Description of Motor	Catalogue No	Weight of Motor	Size of Furrows			Weight of earth disturbed per yard run	Mean resistance† of soil as shown by dynamometer in lbs. for 5 in. deep
				Width	Depth*	Area in sq. in.		
J. & H. McLaren, Leeds	Steam	5	Tons, cwt., qrs. 4 19 3	inches 30	inches 5	150	lb. 275.5	7.4
Mann's Patent Steam Cart and Wagon Co. ...	Steam	6	4 16 0	30	5½	165	315	7.4
W. Allis & Stevens, Ltd., Hants.	Steam	11	4 19 3	29.5	4½	132.75	234.36	7.4
Ivel Agricultural Motors, Ltd. (single gear)	Oil	3	1 14 3	28	5	140	259.41	7.2
Ivel Agricultural Motors, Ltd. (double gear)	Oil	4	1 17 1.3	29	5	145	265.36	8.06
H. P. Sanderson ... (45-50 B.H.P.)	Oil	8	4 13 0	28	5	140	258.22	8.06
H. P. Sanderson ... (25-35 B.H.P.)	Oil	9	3 11 2	29.5	5	147.5	273.36	8.06

* These were the actual depths ploughed in the 5-acre plots, and correspond with the weight of earth moved.

† These tests were made solely to ascertain the relative tenacity of the land in different parts of the field (see Fig. 9), and were carried out on strips adjoining the actual plots ploughed. The same plough and motor were used throughout, without any alteration, the depth being maintained at 5 in., which was the depth the competitors were to have worked. The speed of the motor was kept quite constant. No comparison of the draught at varying depths is intended to be made from these data.

Table No. 2.—SUMMARY OF PLOUGHING.

Name of Competitor	Net Time Ploughing		Time Ploughing		Total Fuel consumed.			Total Water consumed	Total distance travelled in ploughing	Average speed	Water used in ploughing	Fuel per acre ploughed			Description of Motor	Price	Acres ploughed	Fuel per ton of fuel moved
					Coal	Paraffin	Petrol					Coal	Paraffin	Petrol				
J. & H. McLaren, Leeds...	H	M.	H	M.	lbs	gals.	gals.	gals.	Miles.	M.p.h.	gals.	lbs.	gals.	gal.	lbs.	£	5	0.045
Mann's Patent Steam Cart & Wagon Co. "	6	24	6	0	474	—	—	228	16.69	8.88	45.6	54.7	—	—	8.38	530	4.93	.132
Wallis & Stevens, Ltd., Hants "	6	8	5	15½	310	—	—	297	15.62	2.45	60	96.5	—	—	6.26	400	4.93	.128
Ivel Agricultural Motors, Ltd. (single gear) "	7	17	7	5	—	19 06	.5	86	17.46	2.45	6.85	—	3.63	.09	—	275	5.25	.00542
Ivel Agricultural Motors, Ltd. (double gear) "	7	47	7	45	—	18 06	.56	43.5	17.26	2.21	8.73	—	3.36	.11	—	310	4.98	.00526
H. P. Sanderson, 45-50, B.H.P. "	8	7	6	31	—	25.5	3	34.25	17	2.12	6.93	—	5.16	.61	—	450	4.94	.00826
H. P. Sanderson, 25-30 B.H.P. "	8	49	7	28	—	21.37	3.19	3.25	16.69	1.9	.67	—	4.44	.66	—	360	4.1	.00688

NOTE.—Fuel used throughout tests:—Penrhyber Navigation Steam Coal; Pratt's Motor Spirit; Ru-solene. In the last column of Ploughing summary Coal used in getting up steam and Petrol in starting Motors is included.

Table No. 3.—SUMMARY OF BRAKE TEST.

Name of Competitor.	Duration of Test.	During Test.		Average revs. per min.	Fuel Consumption.			Fuel Consumption per B.H.P.			Lbs. of water evaporated per lb of coal	Steam Consumption per B.H.P. hour	Average Steam Pressure	Average Degrees Super-heat			
		Max. B.H.P.	Min. B.H.P.		Coal	Paraffin	Petrol	Coal per hour	Paraffin during trial	Petrol during trial							
J. & H. McLaren, Leeds ...	4 0	22.15	22.8	20.5	294	185	gals.	—	gals.	—	2.08	gals.	—	lbs.	17.2	186	116°F.
Mann's Patent Steam Cart & Wagon Co. ...	4 0	21.0	21.5	19.75	333	312	—	—	—	—	3.72	—	—	6.65	24.35	182	—
Wallis & Steevens, Ltd., Hants. ...	4 4	23.60	25.4	21.80	245	347	—	—	—	—	3.62	—	—	6.7	24.25	164	—
Ivel Agricultural Motors, Ltd. (single gear) ...	0 53	6.65	9.8	Engine slowed up and nearly stopped	565	—	2.81	.25	.94	.04	—	—	—	—	—	—	—
Ivel Agricultural Motors, Ltd. (double gear) ...	2 0	10.94	11.35	10.1	749	—	4.62	.20	.12	.02	—	—	—	—	—	—	—
H. P. Sanderson, 45-50 B.H.P. ...	2 0	23.24	23.9	20.70	539	—	8.9	.30	.98	.013	—	—	—	—	—	—	—

Table No. 4.—TABLE SHOWING COST OF PLOUGHING 5 ACRES.

Item	J. & H. McLaren, Leeds	Mann's Patent Steam Cart and Wagon Co.	Wallis & Stearns, Ltd., Hants	Ivel Agricultural Motors, Ltd. (single gear)	Ivel Agricultural Motors, Ltd. (double gear)	H. P. Sanderson 45-60 B.H.P.	H. P. Sanderson 25-30 B.H.P.
Fuel	4'58/-	7'13 -	5'29/-	18'76/-	18'11/-	21'28/-	18'69/-
Lubricating Oil...	25 -	13 -	25/-	12/-	12/-	3'25 -	3'00/-
Man on Motors' wages	3'90 -	4'55 -	4'68/-	4'76/-	3'07/-	5'27/-	5'73/-
Boy in attendance	1'80 -	2'10 -	2'14/-	—	—	3'33/-*	3'62/-*
Water	2'30 -	3'00/-	2'70/-	86 -	44/-	84 -	—
Ploughman's wages	2'78/-	3'24 -	3'30/-	3'36/-	3'61/-	3'76/-	4'03/-
Total	15'56 -	20'15 -	18'32/-	32'86/-	22'35/-	37'23/-	35'12/-
Cost per acre ploughed	3'11,-	4'03 -	3'66/-	4'47/-	4'47/-	7'45/-	7'02/-

NOTE.—Costs given do not include Capital Cost or wear and tear of Motors. Fuel costs are worked out taking Coal at 30/- per ton, Russolene at 84d. per gallon. Petrol at 1'8 per gallon. Lubricating Oil at 1/- per gallon. Motor drivers wages at 35/- per week (54 hours). Boy in attendance, wages at 16/- per week (54 hours). *Man at 22/- per week in place of boy. Water at 1/- per 100 gallons. Ploughman's wages 24/- per week (34 hours). Coal used in getting up steam is included in cost of fuel. Average depth of furrow 5 inches.

Table No. 5.

Distance between road town 'Competitor'	Fuel consumed	Water con- sumed	Fuel consumed per mile	Water con- sumed per mile	Time to complete journey	
					1st round	2nd round
J. & H. McLaren, ^{cowls.} 17 1/2	lbs. 214.25	gals. 186	lbs. 8.92	gals. 7.75	H. M. 1 28	H. M. 1 23 16
Mann's Patent St Wagon Co. . 12	408.75	225.25	17.03	9.38	2 15	1 58 -
Wallis and St Hants 12	359	192.25	14.96	8.02	1 52	1 48 30
Level Agricultural (single gear) . ion Trial.						
Level Agricultural (double gear) . 0	gals. Paraffin - 9.12	8.5	gals. Paraffin - .88	354	2 21 30	2 29 54
	Petrol - 1.12		Petrol - .016			
H. P. Sanderson / 17 1/2	Paraffin - 15.31	26.25	Paraffin - .638	1.09	2 18	1 49 -
	Petrol - -		Petrol - -			
H. P. Sanderson : 0	Paraffin - 21	11	Paraffin .87	.46	4 4	1 44 45
	Petrol - - 6		Petrol - .25			

Royal Agricultural Society of England.

Table No. 5.

TRIAL OF AGRICULTURAL MOTORS.

SUMMARY OF TRACTOR TRIALS.

Competition Name	Distance between Stations (feet)										Speed in M. P. H.										Load Drawn	Fuel consumed	Water consumed	Fuel consumed per mile	Water consumed per mile	Time to complete journey			
	4,400		4,500		4,800		5,200		5,200		1,000		1,100		12,100		3,800												
	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round											
J. & H. McLaren, Leeds.	770	870	892	776	609	611	710	876	918	918	961	710	946	946	847	793	840	816	557	557	1000 cwt.	lbs. 214.25	gals. 186	gals. 776	11. 1. 28	11. 1. 23	15		
Mann's Patent Steam Cart and Wagon Co.	770	715	639	598	681	545	753	697	713	892	793	733	746	746	210	606	612	543	456	8	12	40875	225.25	1793	9.38	2 15	1 58	-	
Walls and Stevens, Ltd., Harb.	645	710	585	730	605	730	649	700	710	710	710	680	700	700	740	780	940	575	470	8	12	350	192.25	1496	8.02	1 52	1 48	30	
Special Machine for Ploughing and Harvesting did not compete on Road Traction Trial.																													
Irel. Agricultural Motors, Ltd. (single gear)	645	696	372	100	181	311	592	160	526	100	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910
Irel. Agricultural Motors, Ltd. (double gear)	645	696	372	100	181	311	592	160	526	100	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910	910
H.P. Sanderson 45-70 B.H.P.	711	823	610	103	139	779	726	673	626	626	740	740	610	640	910	780	612	589	589	589	589	589	589	589	589	589	589	589	589
H.P. Sanderson 35-40 B.H.P.	830	830	785	310	170	790	570	600	1000	770	640	600	910	740	140	810	835	800	340	340	340	340	340	340	340	340	340	340	340

Several Machines for Ploughing and Harvesting did not compete on Road Traction Trial.

MISCELLANEOUS IMPLEMENTS EXHIBITED AT LIVERPOOL, 1910.

NEW IMPLEMENTS.

FIFTY-EIGHT implements of various kinds were entered for the Society's Silver Medal as compared with fifty-four entered last year at Gloucester. Out of this number two were absent and two were withdrawn, leaving fifty-four to adjudicate upon.

Silver medals were awarded to four, as below.

No. 407.—*Cylinder for Dressing Seeds.* Price 40*l.*; extra plates per set 8*l.* to 10*l.*, depending on the size and number of indentations.—Exhibited by Robert Boby, Ltd., St. Andrews Works, Bury St. Edmunds. This machine comprises a long horizontal cylinder; inside are fixed longitudinally a number of thick zinc plates full of deep indentations. These blades are set at a considerable angle to the radius, and are fitted

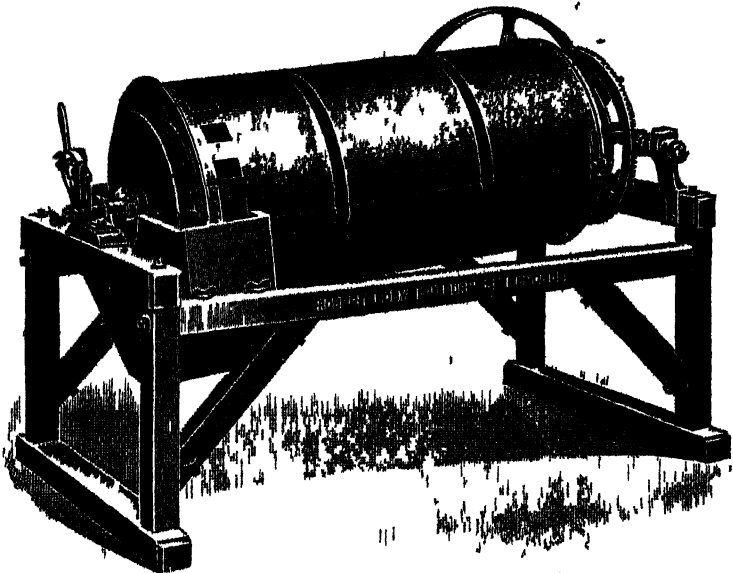


FIG 1.—Cylinder for Dressing Seeds.

into slots so as to be capable of easy removal. The number and size of indentations vary with the size of grain to be dealt with. As the cylinder rotates the imperfect grains and trash are caught in the indentations, whilst the round full grain passes on. The imperfect are lifted up to the top and then fall out into a trough, and are conveyed to a separate exit. This machine, as tested before us, appeared to do its work well, and was also very well made.

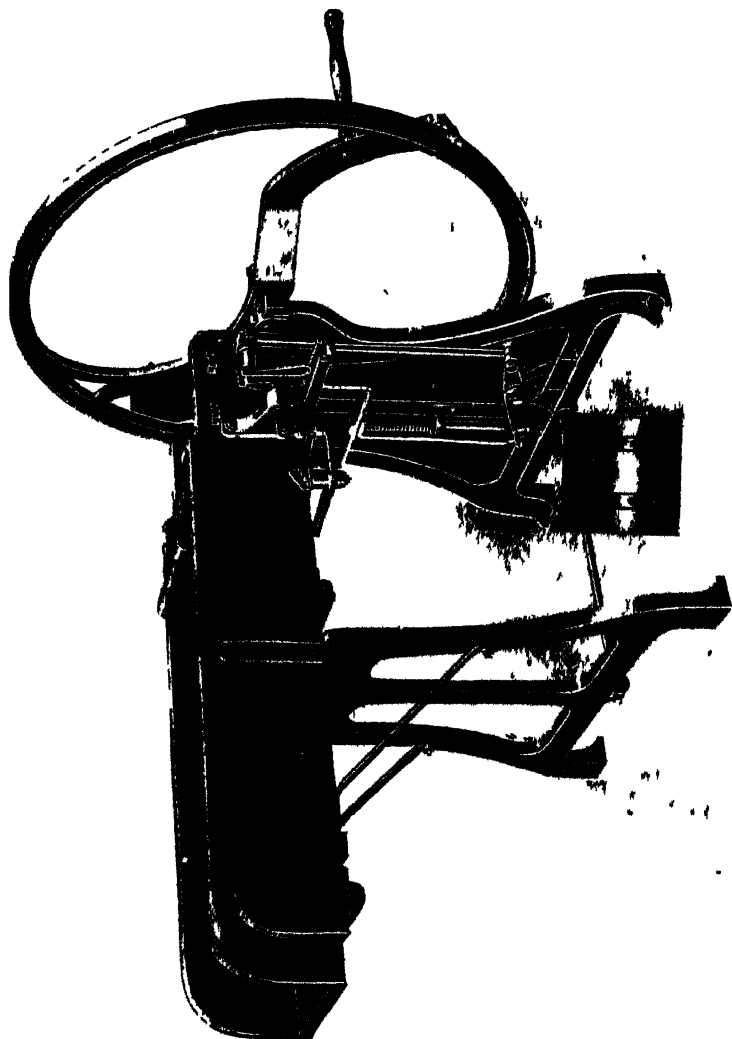


FIG. 2—The "Phoenix" Chaff Cutter

No. 434.—*Chaff Cutter, the "Phoenix."* Price 5l.—Manufactured by W. Richards & Son, Phoenix Foundry, Leicester, and exhibited by J. V. Collyer, Forest Implement Works, Desford, Leicester. Instead of the usual feed rolls the material is fed forward by a sliding open top box having a reciprocating motion; at the termination of its travel towards the knife a pressor plate descends and holds the material firmly and tightly compressed whilst being cut off, the reciprocating box sliding back meanwhile, so as to be ready for the next stroke. The feed is readily altered from $\frac{1}{2}$ in. to 6 in. The absence of the usual tooth feed rolls prevents any possibility of the hand of the operator being drawn in and mangled. We had the machine thoroughly tested with wet straw, and it appeared to work well and cleanly.

No. 1325.—*Single handle Lid Fastener for Diaphragm or other End-over-end barrel Churns.* Price according to size of churn.—Exhibited by Thomas Bradford & Co., Crescent Iron Works, Salford, Manchester. A very neat eccentric handle which by a single movement locks or releases the lid. The action is exceedingly simple and efficient.



FIG. 3.—Single Handle Lid Fastener

No. 1517.—*Cream Separator.* Price 78l.—Manufactured by the Aktiebolaget Pump Separator, Stockholm, and exhibited by the Dairy Supply Company, Ltd., Museum Street, London, W.C. This separator demands notice for its many novel points,

for the perfect manner in which it does its work, and for the silence in running, showing exact balance of moving parts. The capacity of the one we tested is nominally 440 gallons per hour, which, under favourable circumstances, can be increased to 550. On test the machine skimmed 110 gallons in 15 minutes 5 seconds, the percentage of cream left in the milk being .001. The main novel features claimed are : Interchangeable nozzles to inlet tubes ; spring bearing so constructed that new springs can be inserted without special tools ; Belleville springs

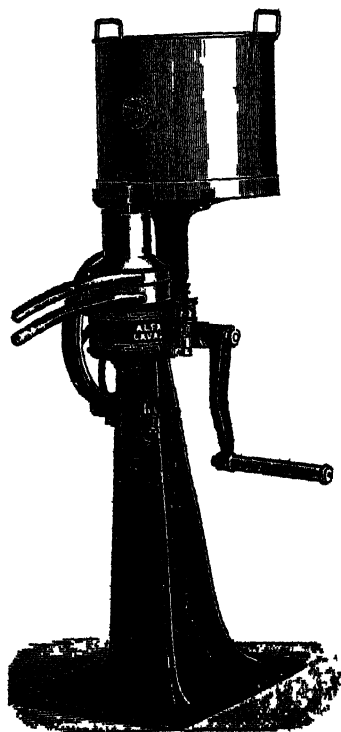


FIG. 4.—Cream Separator.

to bottom bearing carrying weight of bowl ; lubrication to all bearings from one sight feed lubricator ; the base has no spindle but is provided with a taper hole in centre, which fits on to the taper end of the vertical spindle ; the milk feed comes in contact with the discs in bowl at a neutral point, so that there is no intermixture of cream or separator milk with it. The machine is exceedingly well made and the price moderate.

OTHER NEW IMPLEMENTS.

No. 388.—*Turnstile and Collapsible Gate*. Price, registering, 13*l.*, non-registering, 10*l.*—Exhibited by E. Worrall & Co., Iron Gate Works, Liverpool. In this arrangement of turnstile the ends of the arms are bent forward, the idea being that the gap through which it might be possible to squeeze is thus filled up.

No. 432.—*Estate Roller*. Price 17*l.* 17*s.*—Exhibited by W. Summerscales & Sons, Ltd., Phoenix Foundry, Keighley. An ordinary garden roller is fitted with frame carrying a guiding wheel and seat, the roller being propelled by pedals similar to those of a bicycle and suitably geared down.

No. 433.—*Horse Hoe, "The Wedge."* Price 4*l.* 10*s.*—Exhibited by J. V. Collyer, Forest Implement Works, Desford, Leicester. Instead of the usual bolts and nuts the implement is held together by cotters with a head at each end to prevent falling out and getting lost, being, in fact, a combination of a gib and a cotter. All adjustments can be readily made by an unskilled man using a hammer only.

No. 571.—*Artificial Manure Distributor and Spreader*. Price 12*l.*—Exhibited by Penney & Co., Ltd., City Iron and Steel Works, Lincoln. The opening of lid of long manure box cuts off all feeds. The amount fed per acre is capable of easy adjustment.

No. 674.—*Light Oat Extractor*. Price 5*l.*—Exhibited by Clayton & Shuttleworth, Ltd., Stamp End Works, Lincoln. The light oats are separated from both the marketable grain and the chaff and delivered into a special bag. They claim 10 per cent. extra output and a better sample of grain.

No. 721.—*Foot-rot Trough and Rack Combined*. Price 7*l.* 10*s.*—Exhibited by J. L. Larkworthy & Co., Lowesmoor Iron Works, Worcester. The novelty consists in the combination of the two articles.

No. 859.—*Manure Mill*. Price 25*l.*, smaller size, 7*l.* 15*s.*—Exhibited by Ph. Mayfarth & Co., 81 Bunhill Row, London, E.C. It is found that large lumps of material are often found in artificial manures which are most objectionable as they prevent the proper working of the distributor or drills. This machine is designed for breaking down such lumps. The machine, though somewhat roughly made, did its work well when tested by us with soda and rough salt in blocks. Capacity 3 tons per hour.

Nos. 1042, 1043, 1044.—*Manure Distributors*.—Exhibited by Alexander Jack & Sons, Ltd., Maybole, Scotland. No. 1042. Price 14*l.* Notable for the extreme ease with which the discharge wheels can be taken out for cleaning, and lightness of draught is also claimed. Capacity 3 cwt. No. 1043 is practically the

same, but arranged for broadcast. No. 1044: The same machine combined with double pair horse plough; the ploughs are independent and can be lifted separately.

No. 1109.—*Wire Fencing Electrically Welded*. Price 9d. per yd. 5 ft. high.—Exhibited by T. Page, Bottesford, Nottingham, manufactured by the Pittsburg Steel Company, U.S.A. The vertical and horizontal wires are electrically welded at each crossing, making an exceedingly neat and strong fence.

No. 1167.—*Cream Separator*. Price 12l. 10s.—Exhibited by The Titania Company, 4 Euston Buildings, Euston Street, London, N.W. The spindle is suspended from top on a special ball bearing which again is suspended on springs. Capacity 44 gallons per hour.

No. 1180.—*Cream Separator*. Price 60l.—Exhibited by R. J. Fullwood & Bland, 31-33 Beviden Street, Hoxton, London, N., and manufactured by Aktiebolaget Pump Separator, Stockholm. Claims large capacity, capability of runs of up to four hours on end without stopping, and throttle valve regulation. Capacity 400 gallons per hour.

No. 1593.—*Cream Separator*. Price 12l.—Exhibited by Watson, Laidlaw & Co., Ltd., 98 Dundas Street, Glasgow. In this machine there are no springs to the bowl bearings, a washer of a special close white felt "Flexine" being used instead. The bowl is of very simple construction and has no holes or tubes. Capacity 50 gallons per hour, hand driven.

No. 2837.—*Cream Separator and Emulsor Combined*. Price 17l.—Exhibited by R. A. Lister & Co., Ltd., Dursley. Can be used either as a separator in the usual manner or by changing the bowl, as an emulsifier for combining palm oil, margarine, &c., with the separated milk for feeding calves. We had this tested in the dairy and found the resultant emulsion contained 2.6 per cent. of palm oil. Capacity 50 gallons per hour.

No. 1802.—*Farm Lurry fitted with Earlam's Patent Tipping Gear*. Price 32l.—Exhibited by John Earlam, Bosley, Macclesfield. The tipping arrangement consists of a screw fitted across frame of lurry, one end of which is cut right hand, the other left, the two nuts are connected by toggle joint links to underside of body. When screw is rotated the nuts are brought together and consequently the body is lifted, two speeds are provided for rotating the screw.

No. 1803 on same stand.—*Adjustable Gate Hanging*. Price per set 8s. 6d.—Patrick's Patent. The bottom eye is formed on the end of a square sliding bar fitted with a ratchet and pawl. Should gate drop it has merely to be lifted at its outer end, this tends to draw the square bar out of its socket when the pawl falls into another tooth and retains the gate in position.

No. 1865.—*Self Fastening Blade for horse hoes, scuffles, and similar implements.* Exhibited by F. Randell, Ltd., St. Nicholas Works, North Walsham. The end of square arm carrying the blade is bent forward at right angles the horizontal part being somewhat tapered, the blade has two parallel slits cut partly across at about its centre, the metal between these slits being raised upwards so as to form a species of loop through which the tapered end of arm can be inserted. The greater the resistance the tighter the blade is forced on to the arm. The blade can be very easily taken off, using a hammer only.

No. 1969.—*Root Cleaner and Cutter.* Price 14l. 10s.—Exhibited by J. Davis & Bailey, Boxmoor Works, Hemel Hempstead. The roots are fed in by rotating worms and cleaned by a peculiar arrangement of jointed discs.

No. 1970.—*Potato Raiser.* Price 20l.—Exhibited by David Wilson, Bridgeside Implement Works, East Linton, Prestonkirk. Claims to raise and not damage the tubers, clean off adherent soil, and deliver them in a row.

The potatoes are lifted by a share, the halm is cut off by a revolving cutter, the mud knocked off by two vertical revolving shafts fitted with sundry pegs and blades, thence they pass up an incline to a shaking grid where they lose any remaining earth and are thence delivered in a row behind the machine. Weight of machine as exhibited about 8 cwt., but exhibitor stated that future machines would be much lighter—about 5 cwt. 2 qrs.

No. 2099.—*Potato Raiser.* Price 16l.—Exhibited by Powell Bros. & Whitaker, Cambrian Iron Works, Wrexham. This machine is more of the usual type: 6 forks are worked, and have a compound motion in two directions given to them by a revolving disc wheel, the upper end of these rods being guided in a ring common to all.

No. 3094.—*Potato Digger.* Price 15l. Exhibited by Andrew Pollock, Mauchline, Ayrshire. This is another machine of very similar type to No. 2099 last described. The novelty claimed consists in a simple arrangement for adjusting the motion of the shares by bolts working in slots, these bolts being fitted with corrugated washers to prevent the possibility of slipping. The weight of this machine is only 5 cwt. 2 qrs.

No. 3639.—*Potato Digger.* Price 15l.—Exhibited by Bamford & Sons, Leighton Iron Works, Uttoxeter. This is again of same type, but the gears are all entirely enclosed and run in grease, the tines or shares are provided with relief springs which allow them to fall back so as to clear any obstruction. The tines are so arranged as to be very readily changed.

It will be observed that three out of the four Potato diggers entered for Silver Medal are of the same type and differ only

in details. The remaining one is totally different, and professes to do very much more in the way of cleaning the tubers and depositing them in a neat row behind the machine.

No. 2498.—*The "Easy-Tip" Wagon*. Price 42l. 10s.—Exhibited by Henry Street & Co., Bunbury Street, Nottingham. The wagon is much of the ordinary 4-wheel type. The tipping arrangement consists of a bent catch under the frame; on release of this the body tips over backwards, provided the load is properly distributed in the body.

No. 2593.—*Foster Mother for Chickens*. Price 4l. 4s.—Exhibited by G. B. Sharp, The Poultry Farm, Newton, Kirkham. This is of the ordinary type and heated by a lamp. All the air admitted has to pass through the lamp, and is warmed in so doing. The lamp is filled with an adjustable cover to enable the amount of heat to be regulated.

No. 2814.—*Sheep Trough*. Price 5l.—Exhibited by David Morris, Penlwyys, Old Colwyn, N. Wales. The feeding trough is provided with covers which are normally closed; the weight of the sheep stepping on to the foot-board opens the covers. The food is, therefore, always kept dry and in good condition.

No. 2928.—*Portable Drilling Machine*. Price 3l.—Exhibited by Alexander Engineering Company, Goswell Road, London, E.C. A conveniently arranged small machine for drilling holes in pipes, pillars, &c., fitted with ball bearings, rotary and ratchet motion. Weight only 25 lb.

No. 2932.—*Combined Sheep and Pig Trough*. Price 1l. 10s.—Exhibited by Hy. A. Eckley, Aston Ingham, Ross-on-Wye. Claims the design is such as to prevent the animals stepping into the food.

No. 2960.—*Side Delivery Rake, Swath Turner and Tedder Combined*. Price 17l.—Exhibited by Martin's Cultivator Co., Ltd., Lincolnshire Iron Works, Stamford. This is an ingeniously designed implement, which, by making use of the various speeds provided, can be used for any of the above operations. It would appear to be well worth a careful trial.

No. 2961 on same stand.—*Grinding Mill*. Price 22l. 10s.—A disc wheel of carborundum, 21 in. in diameter, running about 450 revs. per minute, in a vertical plane, i.e., the shaft of disc is horizontal; stated to be able to grind 2 cwt. of barley in seven minutes. Appears to be a well-designed machine of ample proportions throughout.

No. 3021.—*Improved Arrangement of Floors and Fittings for Shippens or Cow-houses*. Price of bricks, $9 \times 4\frac{1}{2} \times 3$, 3l. 5s.—Exhibited by The Turner-Crocker Sanitary Appliance Co., Ltd., 21 Hatton Garden, Liverpool. The improvement consists of a vitrified corrugated brick of a non-slipping pattern, and without any cross grooves to retain filth.

No. 3308.—*Multifuel Vertical Engine*, $3\frac{1}{2}$ B.H.P. Price 42*l.*—Exhibited by Capel & Company, 168 Dalston Lane, London, N. A small vertical, internal-combustion engine, with magneto ignition, and mounted on wooden skids for farm work. Engine was fitted with a fan brake and was run before us at about 350 to 400 revs. on both petrol and paraffin. After the carburetter was adjusted to suit the fuel, it would run equally well on either. No foulness or smell was perceptible from the exhaust whilst using paraffin.

No. 3312.—*Swath Turner for Small Holders*. Price 8*l.*—Exhibited by W. N. Nicholson & Sons, Ltd., Trent Iron Works, Newark. For use in very hilly country; a very small and light swath turner, which would, no doubt, be convenient where only one light horse is available. The weight is only 3 cwt. 2 qrs. Can also be used for making wind-rows.

No. 3441.—*Motor-Driven Roller*. Price 397*l.*—Exhibited by Barford and Perkins, Queen Street Iron Works, Peterborough. A novel combination of a road roller propelled by an internal-combustion engine, fitted with tank for carrying water for sprinkling road, new-laid stones, &c., also with a receptacle at back capable of containing about 15 cwt. tarmac for small repairs, such as patching pot-holes; also fitted with belt pulley for stationary work. The engine is started on petrol; after warming up is run on paraffin. Speed about three mile per hour travelling, and $1\frac{1}{2}$ when rolling. Weight, light 6 tons, in working order 8 tons. A very well-thought-out design, and likely to be useful where there is sufficient constant work to justify its first cost.

No. 3723.—*Sheep-Shearing Machine*. Price 75*l.*—Exhibited by R. A. Lister & Co., Ltd., Dursley, Gloucestershire. Four sheep-shears, driven by flexible shafting, obtain power from a Lister petrol-driven engine of 4 H.P. This engine is mounted on a frame, with fore carriage and travelling wheels. No radiator is fitted, the water being cooled by running down over the surface of a stepped cone. The flexible shafts are driven by friction off the fly-wheels, being capable of being thrown in or out of action independently by means of an eccentric. Stated to be able to shear a sheep in three to four minutes. Weight, complete, about 11 cwt.

No. 3907.—*Root Elevator and Cutter*. Price 30*l.*—Exhibited by J. Clay and Company, Wrekin Foundry, Wellington, Salop. The roots are elevated to a given height, say some 12 ft., by means of a Jacob's ladder; in falling they first pass through a revolving riddle to knock off the attached earth, and thence to an ordinary pulper. The whole plant is driven by a 2 H.P. oil engine, and can be run by one man.

No. 3912.—*Milking Machine Portable Outfits*.—Exhibited by Vaccar, Ltd., 7 Denman Street, London Bridge, S.E. This outfit is designed for use where cows are milked in the field. A small air pump is mounted on top of can, which latter is of course hermetically sealed, and maintains a vacuum of about 13 lb., the teats are pressed by indiarubber tubes which carry the milk to the can. Price according to size.

No. 4084.—*Steam Plough, Six-Furrow*. Price 96l.—Exhibited by J. & H. McLaren, Midland Engine Works, Leeds. This highly novel and ingenious implement has six shares set directly one behind the other under the main frame of the machine, consequently were this frame hauled in a direct line with the rope only one furrow would be cut. But the main frame, which forms an obtuse angled triangle, the shares being set under the long side, is hauled from a point about the centre of one of the shorter sides. In consequence the long side carrying the shares takes a diagonal position as regards the rope, so that each share cuts its own furrow. Two or more such ploughs can be attached one behind the other, the only apparent limit being the hauling power of the engine, thus covering a correspondingly large stretch of ground. For example, *one* six-furrow plough covers 7 ft. 0 in., *one* six and *one* four-furrow may be coupled together in echelon and cover a width of 11 ft. 8 in., or *one* six and *two* four-furrow may be coupled together and cover a width of 16 ft. 4 in. For travelling on the road a different mode of coupling is used with which the ploughs travel in direct line one behind the other and cover little more breadth than the engine. They are then self-steering, using the same steering gear as is used when the ploughs are at work. One of the great difficulties in the design of such ploughs has been to find a satisfactory method of lifting the shares out of the ground at the end of a furrow and dropping them again when required. Messrs. McLaren, however, claim to have entirely overcome this difficulty; in a simple manner the shares are self-lifting without any manual exertion, and maintain themselves clear so long as desired, and they can be dropped again by the motion of a single lever.

No. 4138.—*Hoisting and Hauling gear, fitted to Standard Petrol Motor Wagon*. Price 40l.—Exhibited by Clayton & Co., Ltd., Union Works, Huddersfield. An ordinary drum is driven by the engine, this can be used either as a rope drum for hauling or hoisting or as a belt drum for driving other machinery.

No. 4224.—*Suction Gas Plant for Bituminous Fuel*.—Exhibited by the Morton Gas Syndicate, Ltd., Hyde Junction Iron Works, Hyde, near Manchester. This was an extremely

interesting exhibit. The ordinary producer requires to be fed with either anthracite or coke, generally the former. As this is often difficult to procure and also expensive, a producer to work with ordinary bituminous, *i.e.*, house coal, would very largely increase its range of application and general value. We therefore had this machine tested by the Society's Engineer, Mr. Courtney. Unfortunately the engine which it was driving, of 33 H.P., manufactured by the Dudbridge Iron Works, Ltd., proved to be rather beyond the capacity of the producer and the trial had to be discontinued. I understand that the producer was only rated at 20 H.P. but that the exhibitors were unable to procure an engine of this size and had to take what they could get at short notice. The trial, however, was distinctly promising and I trust the producer will be again exhibited next year at Norwich and tested under more favourable conditions.

No. 4579.—*Electric Portable Sheep Shearing Plant.* Price 160*l.*—Exhibited by the Wolseley Sheep Shearing Machine Company, Ltd., Sydney Works, Birmingham. Six shears are driven by flexible shafts, the power is obtained by a 3 H.P. petrol engine driving a dynamo, each shear has its own motor and is therefore entirely independent of all the others. The main dynamo will also supply light if required, or can be used for charging batteries or for driving any other machinery.

No. 4580.—Price 48*l.* 10*s.*—Same exhibitors. Very much the same as last, but with two sets of sheep shearers driven direct by belt from flywheel engine; can also be used for other work. A neat arrangement is a large emery wheel mounted on end of engine crank shaft for grinding the combs and shears.

No. 4837.—*Hay Rick Cover.* Price, with necessary wire ropes and hangers, 7*l.*—Exhibited by T. L. Mullally, 283 Cleveland Street, Birkenhead. The cover is made of flat galvanised iron sheets, the edges of which are so formed as to hook together watertight. The plates are interchangeable and easily fitted together, and can be used to cover any sized stack.

No. 4838.—Price 7*l.*—Same exhibitor. Very much the same, but the plates are curved to a segment of a circle instead of being flat.

MISCELLANEOUS IMPLEMENTS.

No less than 4,856 implements were catalogued, as compared with 4,682 at Gloucester, and 4,481 at Newcastle. The following appear to be worthy of notice:—

No. 149.—*Tipping Wagon.* Price 42*l.*—Exhibited by R. A. Dyson, 76 Grafton Street, Liverpool. This, owing to some misunderstanding on the part of exhibitor, was not entered as

a "new implement," as it should have been. To tip wagon, all that is necessary is to draw back two sliding bolts and back the horse; the body then slides back on top of frame over the back wheels until it tips over backwards. To replace body move the horse forward, when the body comes back into position and the two bolts are shot home. Extremely simple and effective, and well worthy of notice.

No. 192.—*Commission of Economic Expansion of Brazil*, 21 Clifford Terrace, St. Budeaux, Devonport.—A most interesting exhibit of the various products of the country, very well arranged and most instructive.

Nos. 418 and 419.—*Butter Churns*.—Exhibited by Robert Boby, Ltd., St. Andrew's Works, Bury St. Edmunds. A square oak box contains revolving paddles worked by a handle. Appears very suitable for the purpose and well made.

Nos. 457-504.—Exhibited by the Four Oaks Undentable Syringe and Spraying Machine Company, Four Oaks, Birmingham. A very large and interesting exhibit of spraying machines adapted to use for various purposes.

Nos. 548 and 549.—*Wringing and Mangling Machines*.—Price 3*l.* 7*s.* 6*d.*—Exhibited by Smith & Paget, Crown Works, Keighley. Containing several novel features. The gears are all properly guarded, the rolls fitted with roller bearings and also with a reverse motion.

Nos. 591 and 592.—*Improved Root Washers*. Prices 4*l.* 4*s.* and 5*l.* 10*s.*—Exhibited by Penney & Co., Ltd., City Iron Works, Lincoln. The roots are placed in a revolving drum. When clean, the motion of drum is reversed and the roots automatically ejected.

Nos. 674-687.—Exhibited by Clayton & Shuttlesworth, Stamp End Works, Lincoln. Messrs. Clayton & Shuttlesworth's work is so well known that comment is needless. Attention may be drawn to design of the traction engines. The ordinary cast-iron saddle for carrying the cylinders on top of boiler is dispensed with, and in place of it a seating of pressed steel plate is riveted to the boiler, making at once a much stronger and neater job. In addition to their usual display of engines and threshing machines, the makers this year exhibit two centrifugal pumps, in which both the inlet and delivery branches are mounted on swivels so that they can be pointed in any direction. This simple design should obviate the expense and delay of having to get special bends and closing pipes made, as would otherwise be required.

No. 760.—*Sheep Rack*. Price 4*l.* 10*s.*—Exhibited by J. L. Larkworthy & Co., Lowesmoor Iron Works, Worcester. The cover is worked by a foot pedal; it is therefore unnecessary for the shepherd to put down his load to

open the lid. All he has to do is to put his foot on the pedal, when the lid flies open, and he is able to cast his load straight into the rack.

No. 896.—“*SOE*” *Corn and Seed Drill*. Price 26*l*.—Exhibited by Ph. Mayfarth & Co., 81 Bunhill Row, London, E.C. This drill has fifteen coulters and covers a sowing width of 13 ft. 3 in. A special form of feeding device prevents any damage to the wheat. The machine can be easily altered to sow clover.

No. 1021.—*Motor Mower*. Price 145*l*.—Exhibited by Thomas Green & Son, Ltd., Smithfield Iron Works, Leeds. On this stand was a fine exhibit of lawn mowers, many of them being driven by petrol engines. A good example is the number given above. To cut 36 in. wide at the rate of $1\frac{1}{2}$ miles per hour. Weight 10 cwt. 2 qr.

Nos. 2002–2004.—*Drills*. Prices from 23*l*.—Exhibited by Kell & Co., Ltd., Gloucester. A well-made double cup feed drill of the American type, but manufactured entirely in England in competition with the American article.

Nos. 2062–2069.—Exhibited by Richard Garrett & Sons, Ltd., Leiston Works, Leiston. This well-known firm have an interesting exhibit of three traction engines, two steam motor wagons, two portables and a threshing machine, which are well worthy of notice.

Nos. 2070–2077.—Exhibited by Aveling & Porter, Ltd., Rochester. As usual, an excellent exhibit of steam rollers and traction engines. No. 2076, a steam motor lorry, with india-rubber-tyred wheels and Belpaire fire-box, is specially worthy of notice.

Nos. 2100–2107.—*Mowers*. Prices from 13*l*.—Exhibited by Powell Bros. & Whitaker, Cambrian Iron Works, Wrexham. Mowing machines of particularly good design and workmanship; among many other good points, these are fitted with four roller and one ball bearing, which must tend to reduce the draught considerably. To be noted in view of the little attention such bearings usually obtain.

No. 2285.—*Turnip-Cutting Cart*. Price 18*l*.—Exhibited by Kemp & Nicholson, Scottish Central Works, Stirling. An ingenious combination of an ordinary farm cart, with a turnip cutter, the latter being driven off one of the road wheels through a clutch.

No. 2433.—*Tar Spraying Machine to contain 160 gallons*. Price 70*l*.—Exhibited by the Phoenix Engineering Company, Ltd., Chard. Considering the great value and rapidly increasing use of spraying tar for the prevention of dust on country roads, this well-designed machine is of much interest. It has a capacity, under normal conditions, of spraying

three-quarters of a mile of road 30 ft. wide per day of twelve hours, and consists of an ordinary tar boiler mounted on travelling wheels, and fitted with a sprayer behind, either with or without a rotary brush, the latter distributing the hot tar evenly over the surface and brushing well into the road.

Nos. 2736-2739.—Exhibited by George Cradock & Co., Ltd., Wire Rope Works, Wakefield. An interesting exhibit of wire ropes of various qualities and sizes, also of billets of steel for making into the wire, and an excellent collection of tests of steel, including some of chrome vanadium steel, the breaking strength of which is about 100 tons per inch. I would add that one of the most valuable features of this steel is its extraordinary resistance to "fatigue" tests, such as slightly bending a bar to and fro until it breaks. In some such tests I have seen, the value of chrome vanadium steel, as compared with the very best Yorkshire iron, was, in round numbers, about 60 to 1. In other words, should steel of such quality be found suitable for the manufacture of agricultural implements, the weight could be reduced to a fraction of what it is at present, with an equal margin of safety.

Nos. 3172-3187.—Exhibited by Samuelson & Co., Ltd., Britannia Works, Banbury. An elaborate series of machines for grinding and preparing the pure white flour which is so much in request. This machinery is far too elaborate for a brief description to be of any value, but it is certainly quite worthy of notice.

Nos. 3198 and 3199.—*Manure Distributors, Broadcast*, 8 ft. wide, for chemical manures, either wet or dry. Price 21*l.* 10*s.*—Exhibited by James Coultas, Perseverance Iron Works, Grantham. A long roller, studded with wires, just touches the material in the manure box. This box is slowly raised automatically as the material is used, so as just to maintain the material at a uniform level as compared to the studded roller. This machine took the Silver Medal at the R.A.S.E. Show at Doncaster in 1891.

Nos. 3203-3249.—Exhibited by Ransomes, Sims & Jefferies, Ltd., The Orwell Works, Ipswich. A large and excellent exhibit from these well-known makers. Special attention may be drawn to catalogue No. 3239, Cultivator. This is a new implement, though not entered as such. It is exceedingly strongly built, and owing to its being so short will work evenly even over ridge and furrow. Price 10*l.* 5*s.*

Nos. 3801-3840.—Exhibited by James and Frederick Howard, Britannia Iron Works, Bedford. Among a large and varied exhibit of ploughs, a novel implement in England was a three-furrow disc plough to be drawn by sixteen oxen.

The discs are set on the skew so that they cut into the ground and turn over the furrow. Price 13*l.* 10*s.*

No. 4136.—*Horizontal Engine.* Price 96*l.*—Exhibited by Davey, Paxman & Co., Ltd., Standard Iron Works, Colchester. Stationary engine of the Lentz model, remarkable for the low consumption of steam the makers guarantee. With a boiler pressure of 170 lb. and superheat of 150° F. the guaranteed consumption is only 10·35 lb.

No. 4169.—*Suction Gas Plant.* Price 75*l.*—Exhibited by Crossley Bros., Ltd., Openshaw, Manchester. A very neat and simple form of producer, very accessible, and parts liable to require renewing are cheap to replace. Messrs. Crossley also had a large and excellent exhibit of gas and oil engines.

I must express my sincere thanks for the able co-operation of my co-judge, Mr. Claude W. Thompson, and for the courtesy and assistance of the Stewards of Implements, Mr. F. S. W. Cornwallis, the Hon. J. E. Cross, and Mr. Claude M. S. Pilkington, and also my thanks are due to the Society's Consulting Engineer, Mr. F. S. Courtney, M.Inst.C.E. I can but repeat what I said in my last year's report, "that except for the assistance so ably and ungrudgingly given by these gentlemen, it would have been impossible to have got through the work in the time available."

WM. CROSS, M.Inst.C.E.

MILK AND BUTTER TESTS AT THE LIVERPOOL SHOW, 1910.

I.—MILK-YIELD TESTS.

THE prizes given by the Royal Agricultural Society in the breed classes for these competitions were the same as on previous occasions, the Devon Cattle being included with the other breeds, and judged under similar conditions, and with the same scale of points.

The prizes for the Special Milk-yield Class which had been given in previous years by the English Jersey Cattle Society were not forthcoming this year.

That the standard of points necessary to be gained before a prize or commendation can be awarded is approximately correct is shown by the average of the points gained by the respective breeds; for although in one or two cases it might appear that certain breeds could be placed in the division above that in which they compete, such an alteration cannot be at present recommended, as the number of the animals in those particular classes has not until now been sufficiently large to justify the raising of the standard.

TABLE I.—MILK-YIELD CLASSES AT LIVERPOOL, 1910.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Total milk yield in 14 hours	Fat per cent- age	Points			Awards
								Fat per cent- age	Lacta- tion	Total	
Class 100											
972	C. R. W. Adesone.	<i>Shorthorns</i> Babraham Eve Bates	Sept. 9, 1905	1910	64	11.02	8.15	12.90	240	87.50	3rd Prize.
973	W. M. Cazalet	Amport Ursula	Nov. 5, 1904	Apr. 23	62	56 14	8.62	14.48	220	73.55	2nd Prize.
985	R. W. Hobbs & Sons	Primula 70th	Jan. 5, 1905	June 1	23	42	8.30	15.20	111	55.70	—
987	R. W. Hobbs & Sons	Snowdrop 52nd	June 28, 1904	Jan. 15	169	45	9.82	11.20	140	58.48	Fat Below Standard.
988	W. Nibbet	Ewerby Sweet Duchess 3rd	Nov. 23, 1905	Feb. 1	142	45	0	12.48	1020	68.10	Fat Below Standard.
989	H. H. Owttram	Lady Stratford 5th	Nov. 1, 1904	May 27	97	44	8.12	12.48	111	61.85	H.O.
990	H. H. Owttram	Newland Poppy	Jan. 30, 1901	May 7	71	44	8.01	14.60	1204	50.70	—
991	Lord Rothschild.	Oakham Peacock	May 30, 1904	Apr. 11	23	53	10	9.68	141	68.40	Fat Below Standard.
994	S. Sanday	Darlington Cranford 10th	Apr. 12, 1903	May 4	60	50	4	10.80	140	64.05	Fat Below Standard.
996	S. Sanday	Warwickshire Lass 5th	Aug. 1, 1903	May 21	31	53	8	12.80	111	62.95	H.O.
998	J. W. Sanders	Tricksy 18th	July 1, 1903	May 21	33	58	14	14.88	111	73.75	1st Prize.
999	R. Shelton	Concordia 2nd	July 1, 1903	May 23	31	42	8	15.08	111	63.53	H.O.
1001	J. M. Strickland.	Brandy's Princess	Feb. 1, 1905	May 23	31	42	8	15.08	111	63.53	H.O.
1015	J. W. Sanders	Nelly Lee 5th	Aug. 28, 1906	Apr. 21	63	42	8	14.08	230	58.88	—
Class 108											
1049	A. P. Brandt.	<i>Longhorns</i> Stemigot Bloom 10th	Apr. 7, 1904	June 3	21	56	4	13.40	111	69.05	R.H.O.
1050	J. Evans	Burton Oak 6th	Apr. 30, 1906	Apr. 28	65	65	4	14.88	160	81.48	2nd Prize.
1051	J. Evans	Burton Enchante 3rd	Apr. 30, 1903	Apr. 28	29	77	12	18.00	111	69.75	1st Prize.
1052	J. Evans	Burton Marjorie 2nd	Aug. 2, 1903	May 10	44	61	8	11.12	1100	72.02	Fat Below Standard.
1057	C. E. Scorer	Bracebridge No. 182	Feb. 28, 1903	May 1	41	58	8	11.48	140	68.08	Fat Below Standard.
1063	C. E. Scorer	Panton No. 208	Feb. 28, 1901	May 1	53	58	8	14.20	130	74.00	3rd Prize.
1069	F. E. Wilkinson	Domington Grayney	Oct. 1, 1900	May 2	52	36	8	14.68	1468	52.58	—
Class 124											
1181	G. I. B. Chetwynd	Compton Lovely	Feb. 5, 1904	Apr. 25	59	87	6	17.00	130	56.27	3rd Prize.
1182	G. I. B. Chetwynd	Magnet	Apr. 12, 1901	Apr. 13	72	42	14	12.08	320	67.40	1st Prize.
1184	J. H. Chick	Charmer	Apr. 1, 1903	Mar. 20	82	49	14	16.88	450	64.05	2nd Prize.
1185	W. D. Chick.	Compton Moss 2nd	Mar. 1, 1900	Apr. 22	60	29	0	15.00	220	44.20	—
Class 130											
1196	S. Veoper	<i>South Downs</i> Victoria	Oct. 8, 1902	Mar. 20	95	52	14	11.40	550	70.77	Fat Below Standard.
1197	W. P. Veoper	Gowslip 5th	Feb. 28, 1901	Mar. 13	97	50	14	12.88	570	88.00	1st Prize.
1198	W. P. Veoper	Daisy	Dec. 1, 1904	Mar. 7	108	52	14	14.08	680	78.78	3rd Prize.
1200	W. & H. Whitley.	Handsome	Feb. 1, 1903	Mar. 10	105	48	12	16.48	650	72.73	R.H.O.
1201	W. & H. Whitley.	Pansy	Apr. 1, 1904	Apr. 10	74	59	10	15.80	540	76.83	2nd Prize.
Class 135											
1217	Lord Gerard	<i>Longhorns</i> Bentley Dido	Jan. 11, 1904	May 25	29	35	10	18.80	111	54.42	—
1219	J. L. & O. Riley	Purley Fortia	July 8, 1905	May 8	49	44	0	17.20	180	69.10	2nd Prize.
1220	W. Hanson Sale	Lady Fausa	Sept. 8, 1902	Apr. 25	59	44	6	18.88	130	66.15	1st Prize.
Class 152											
1286	K. M. Clark.	<i>Red Polls</i> Sudbourne Queen 1st	Sept. 3, 1904	Apr. 22	62	8	4	17.88	220	71.68	1st Prize.
1289	Sir Walter Corbet, Bt.	Acton Fillpall	Mar. 3, 1905	Apr. 19	65	45	4	15.20	250	60.95	2nd Prize.

TABLE I.—MILK-YIELD CLASSES AT LIVERPOOL, 1910—continued.

No. in Challenge	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Pounds				Awards
						Total milk yield in 24 hours	Fat per cent- age	Milk	Lacte- tion by 4		Total
Red Polls—continued.										
Class 152	Sir Walter Corbett, Bt	Wadlight 2nd	Feb. 28, 1902	May 22	52	43 12	3.05	43 75	12 20	55 95
1300	Rt. Hon. A. E. Fallowes	Chedda	Oct. 7, 1903	Apr. 29	55	45 12	2.42	45 75	9 68	56 95
1301	A. C. Fyfe Smith	Queen Mab	May 28, 1906	May 25	55	43 53	4.19	43 52	11 80	56 95
1302	A. C. Fyfe Smith	Rendlesham Lucy	Nov. 14, 1903	Mar. 11	104	20	4.40	20 25	17 60	44 25
Class 153										
1303	C. Douglas	Ayrshire	April 1904	May 19	55	50	0	50 00	16 28	66 28
1304	C. Douglas	Anechloch McLean	April 1904	June 4	19	44	3.77	44 25	15 68	60 53
1305	Andrew Mitchell	Kilmory Favourite 5th	Sept. 27, 1901	May 25	64	44	3.17	44 25	15 68	60 53
1306	W. Nesbet	Daliffable Belsa 2nd	Dec. 6, 1900	Mar. 15	100	54	2.45	54 12	13 80	73 92
Class 154										
1307	J. Brunton	Jersey	Aug. 12, 1904	Mar. 7	108	39	6.05	39 87	20 20	60 37
1308	J. Brunton	Irish Lass	Apr. 8, 1905	Apr. 8	76	41	8.47	41 50	19 00	61 10
1309	W. Nesbet	Ghezeah	Dec. 15, 1900	Feb. 21	123	31	8.29	31 50	11 88	61 58
1310	J. de Knoop	Victoria	Apr. 8, 1905	Apr. 10	74	42	4.10	42 37	16 40	62 17
Class 155										
1311	The Marchioness of	Young Marchioness	Oct. 28, 1899	Apr. 9	75	33	4.95	33 25	19 80	56 55
1312	Mrs. McIntosh	Valvetean	Nov. 16, 1900	Apr. 2	82	23	3.72	23 87	14 88	42 20
1313	A. Miller-Hallett	Gloddingham Foxglove	Apr. 27, 1905	May 9	45	42	10.12	42 62	16 48	59 60
1314	A. Miller-Hallett	Jeany Dame	Apr. 27, 1905	May 9	75	40	12.47	40 75	17 68	62 43
1315	A. Pocock	Freemove Lily	Jan. 5, 1906	Apr. 21	63	43	5.80	43 57	15 20	59 57
1316	Lord Rothschild.	Gauntlet 6th	Feb. 4, 1906	Apr. 6	76	43	12.40	43 57	15 20	59 57
1317	Lord Rothschild.	Twylsh 11th	Feb. 4, 1906	Apr. 6	76	43	12.40	43 57	15 20	59 57
1318	G. Murray Smith	Jewel	May 4, 1906	May 2	139	45	2.42	45 12	17 60	62 72
1319	J. H. Smith-Barry	Caprice	July 23, 1906	May 2	139	45	2.42	45 12	17 60	62 72
1320	J. H. Smith-Barry	Malvouse	Aug. 12, 1906	May 2	139	45	2.42	45 12	17 60	62 72
1321	R. Bruce Ward	Retreat's Innua	Nov. 28, 1905	May 8	180	30	5.52	30 57	14 08	65 45
1322	R. Bruce Ward	Violet's Lavanya	Apr. 7, 1907	May 8	46	45	4.25	45 50	15 20	60 70
1323	R. Bruce Ward	Orange Lass	Apr. 7, 1907	May 8	300	35	14.90	35 87	15 20	60 07
Class 156										
1324	Sir R. A. Hambro	Hayes Express	July 5, 1903	Apr. 13	72	34	8.40	34 50	17 60	52 30
1325	J. Thompson Morgan	Violet 2nd	Dec. 24, 1900	May 27	73	34	12.13	34 50	17 60	52 30
1326	H. F. Fumppre	Trueland's Gloriosa	Apr. 27, 1901	May 27	208	30	8.45	30 50	18 00	48 50
1327	Lady Tichborne	Rownham's Gloriosa	Jan. 7, 1906	May 8	61	44	3.92	44 87	15 68	61 65
Class 157										
1328	Fonella	Kerres	May 8, 1899	Feb. 10	183	20	0.17	20 00	12 68	41 98
1329	Lady Greenall	Babney	Apr. 9, 1904	May 22	32	37	0.32	37 00	12 68	41 98
1330	Lady Greenall	Walton Can Can	Apr. 9, 1905	May 22	32	37	0.32	37 00	12 68	41 98
1331	R. Tat Robertson	Duv Rosebud	Dec. 10, 1906	Apr. 22	62	33	14.52	33 14	12 60	45 87
Class 158										
1332	B. de Bortolano	Cowbridge Little Eva	Mar. 16, 1904	Apr. 12	73	35	14.95	35 97	14 60	50 67
1333	R. Martin Gibbs	Barrow Irish Ivy 3rd	Nov. 16, 1905	Apr. 21	63	27	6.25	27 50	13 00	40 50
1334	Hon. Mrs. O. Portman	La Mancho Hard-to-Find	Apr. 8, 1904	May 4	62	27	6.25	27 50	13 00	40 50
1335	Hon. Mrs. O. Portman	Souvenir	Apr. 8, 1904	May 4	62	27	6.25	27 50	13 00	40 50
1336	R. Tat Robertson	Black Diamond	Aug. 12, 1906	May 4	60	13	6.45	13 87	9 80	23 17

216 *Milk and Butter Tests at the Liverpool Show, 1910.*

The points to be obtained by the various breeds are as below:—

	Cows 5 years and over	Cows and heifers under 5 years
Shorthorn, Lincolnshire Red Shorthorn, and South Devon	60	55
Red Poll, Ayrshire, Jersey, Guernsey, and Longhorn	55	50
Kerry and Dexter	45	40

The Table on pp. 214 and 215 gives the details connected with the trials and also the prize winners in their respective classes.

Table II. gives in abridged form the number of the cattle which have competed at the past five Shows of the Society under their breed headings.

TABLE II.

Breed	Derby, 1906	Lincoln, 1907	Newcastle, 1908	Gloucester, 1909	Liverpool, 1910
Shorthorn	10	12	8	13	14
Lincolnshire Red do. . . .	4	8	4	7	7
Devon	—	—	—	4	1
South Devon	2	2	3	4	5
Longhorn	1	2	4	2	3
Red Poll	6	6	5	4	6
Ayrshire	1	4	3	3	4
Jersey	18	9	17	22	17
Guernsey	8	6	5	9	4
Kerry	5	5	8	13	4
Dexter	8	10	7	12	5
Crossbred	—	1	1	—	—
Total	63	65	65	93	73

TABLE III.—*Averages of Cattle entered in the Breed Milk-yield Classes.*

No. of cows com- peting	Breed	Days in milk	Milk Lb. oz.	Fat per cent.	Points			
					Milk	Fat	Lacta- tion	Total
14	Shorthorn	59	49 5	3.148	49.31	12.59	1.90	63.80
7	Lincoln. Red do. . . .	42	58 13½	3.187	58.84	13.94	.20	72.98
4	Devon	69	40 5½	3.672	40.31	14.68	2.90	57.92
5	South Devon	95	56 12	3.422	56.75	13.68	4.50	71.93
3	Longhorn	45	40 10	4.571	40.66	18.25	.50	59.41
6	Red Poll	57	48 4½	3.431	43.29	13.72	1.70	58.71
4	Ayrshire	45	53 10½	3.615	53.65	14.46	.50	68.61
17	Jersey	84	37 14½	4.186	37.89	16.71	4.10	59.03
4	Guernsey	89	40 10½	4.180	40.65	16.72	4.90	62.27
4	Kerry	64	33 3	3.160	33.18	12.64	2.40	48.22
5	Dexter	58	30 5½	3.184	30.32	12.73	1.80	44.85

Thirteen animals were disqualified, the average percentage of fat in the two milkings not reaching 3 per cent. The number is made up as follows:—

5 Shorthorns	out of 14 sampled
2 Lincolnshire Red Shorthorns	" 7 "
1 South Devon	" 5 "
2 Red Polls	" 6 "
1 Jersey	" 17 "
2 Dexters	" 5 "

18

II.—BUTTER TESTS (CLASS 199, A & B).

The number of cows competing in these classes at Liverpool exceeded that at all previous Shows of the Royal Agricultural Society, 49 animals being present; 36 of which were in the heavy and 13 in the light weight class.

The trials were carried out under similar conditions and the same scale of points as in former years, the cattle being stripped on Wednesday, June 22, at 5 p.m., the milk of the next twenty-four hours being taken for the test.

The Table on pp. 218 and 219 gives the full result of the trials, which were chiefly remarkable for the fine performance of Mr. Evens' Lincolnshire Red Shorthorn, "Burton Fuchsia 3rd," with a yield of 77 lb. 12 oz. of milk, from which 3 lb. 12 oz. of butter were obtained.

It is seldom that an animal gives so large a quantity of milk showing 4.5 per cent. of fat.

Table IV. gives the number of cattle competing at the Shows of the Royal Agricultural Society for the past five years under their respective breeds.

TABLE IV.

Breed	Derby, 1906	Lincoln, 1907	Newcastle, 1908	Gloucester, 1909	Liverpool, 1910
Shorthorn	2	1	3	6	9
Lincoln. Red do.	2	8	3	5	5
Devon	—	—	—	3	3
South Devon	2	2	3	4	5
Longhorn	—	1	—	—	2
Red Poll	—	1	—	3	3
Ayrshire	—	—	1	1	2
Jersey	17	14	15	18	19
Guernsey	—	4	1	3	—
Kerry	—	—	—	2	—
Crossbred	—	1	—	—	1
Total	23	35	26	45	49

TABLE V.—RESULTS OF BUTTER TESTS AT LIVERPOOL, 1910.
CLASS 199 A.—COWS IN MILK, OF ANY AGE, BREED OR CROSS, EXCEEDING 800 LB. LIVE WEIGHT. 36 ENTRIES.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Milk fresh in 24 hours	Butter yield	Ratio, viz., lb. milk to lb. butter	Colour and quality of butter		No. of points for butter	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE				
											Colour	Quality					Time	Temperature, ° F.	Buttermilk	Dairy	Finished	Duration (minutes)	Begin
97	R. W. Hobbs & Sons	Primula 70th.	Shorthorn	1425	Jan. 5, '00	June 1	22	42 8 1 0	3954	2.700	Fair	Fair	22.00	Nil	22.00	...	10 26 10 43	18	56	52	53
98	W. Nisbet	Snow drop stud	Shorthorn	1383	June 1, '05	May 4	50	45 12 1 6	3327	22.00	Fair	Fair	22.00	1.00	21.00	...	10 26 11 6	40	56	52	54
99	W. Nisbet	Sweet	Shorthorn	1383	Nov 23, '04	Jan. 15	159	45 9 1 5	3428	21.00	Fair	Fair	21.00	11.90	37.90	H. O.	10 26 11 22	50	56	52	56
100	H. H. O'Grady	Duchess Fordeth	Shorthorn	1335	Sept. 16, '04	Feb. 1	143	43 4 1 22	3905	18.75	Good	Fair	18.75	10.20	29.05	...	10 26 11 5	42	56	52	53
101	H. H. O'Grady	Newland Poppy	Shorthorn	1338	Jan. 4, '01	May 27	27	48 14 1 6	2191	23.00	Good	Fair	23.00	Nil	23.00	...	10 26 10 54	23	56	52	53
102	S. Sanday	Darlington Grand	Shorthorn	1180	Apr. 18, '02	May 21	25	58 10 1 6	4283	23.00	Fair	Fair	23.00	Nil	23.00	...	10 26 10 54	23	56	52	53
103	S. Sanday	Lord John	Shorthorn	1180	Aug. 7, '02	May 4	50	52 4 1 1	4977	17.00	Good	Fair	17.00	1.00	16.00	...	10 31 10 59	28	56	52	5
104	S. Sanday	Lava 8th	Shorthorn	1176	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	33.00	Nil	33.00	H. O.	10 30 11 23	53	56	52	54
105	R. Shelton	Concordia 2nd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	40.25	1.50	41.75	2nd Prize	10 30 11 20	46	56	52	54
106	J. Evans	Burton 2nd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Fair	Fair	40.25	1.50	41.75	1st Prize	10 40 11 11	31	56	52	54
107	J. Evans	Burton 3rd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	Nil	35.00	...	10 34 11 5	35	56	52	54
108	J. Evans	Burton 4th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	28.00	1.0	29.00	H. O.	10 34 11 30	41	56	52	54
109	J. Evans	Burton 5th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
110	J. Evans	Burton 6th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
111	J. Evans	Burton 7th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
112	J. Evans	Burton 8th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
113	J. Evans	Burton 9th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
114	J. Evans	Burton 10th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
115	J. Evans	Burton 11th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
116	J. Evans	Burton 12th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
117	J. Evans	Burton 13th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
118	J. Evans	Burton 14th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
119	J. Evans	Burton 15th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
120	J. Evans	Burton 16th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
121	J. Evans	Burton 17th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
122	J. Evans	Burton 18th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
123	J. Evans	Burton 19th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
124	J. Evans	Burton 20th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
125	J. Evans	Burton 21st	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
126	J. Evans	Burton 22nd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
127	J. Evans	Burton 23rd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
128	J. Evans	Burton 24th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
129	J. Evans	Burton 25th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
130	J. Evans	Burton 26th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
131	J. Evans	Burton 27th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
132	J. Evans	Burton 28th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
133	J. Evans	Burton 29th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
134	J. Evans	Burton 30th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
135	J. Evans	Burton 31st	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
136	J. Evans	Burton 32nd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
137	J. Evans	Burton 33rd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
138	J. Evans	Burton 34th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
139	J. Evans	Burton 35th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
140	J. Evans	Burton 36th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
141	J. Evans	Burton 37th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
142	J. Evans	Burton 38th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
143	J. Evans	Burton 39th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
144	J. Evans	Burton 40th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
145	J. Evans	Burton 41st	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
146	J. Evans	Burton 42nd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
147	J. Evans	Burton 43rd	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
148	J. Evans	Burton 44th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
149	J. Evans	Burton 45th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
150	J. Evans	Burton 46th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
151	J. Evans	Burton 47th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
152	J. Evans	Burton 48th	Shorthorn	1180	July 1, '02	May 4	50	52 4 1 1	4977	17.00	Good	Good	35.00	1.00	36.00	H. O.	11 11 12 30	34	56	52	54
153	J. Evans	Burton 49th	Shorthorn	1180	July 1, '02	May 4	50	52													

TABLE V.—RESULTS OF BUTTER TESTS AT LIVERPOOL, 1910—continued.

CLASS 100 B—COWS IN MILK OF ANY AGE, BREED, OR CROSS NOT EXCEEDING 900 LB LIVE WEIGHT 13 ENTRIES

No in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No of days in milk	Milk yield in 24 hours	Butter yield	Colour and quality of butter		No of points for butter	No of points for fatness	Total No of points	Awards	CHURNING TABLE					
										Colour	Quality					Began	Finished (minutes)	Dairy Cream and butter, %	Temperature, ° F		
1423	K Bewley	Gunning Lass 3rd	Jersey	Lb	1910			Lb oz	Lb oz	Good	Good	27.25	4.90	34.15	2nd Prize & B J O S Silver Medal	2	34	31	50	53	
1424	J Bratton	Irish Lass	Jersey	860	Aug 11, 04	Mar 7	103	29 6 2 1 1/2	19 36	Poor	Poor	25.75	6.80	40.55		2	6	3	50	53	
1425	Jersey de Anoop	Chama Belle 2nd	Jersey	775	June 4, '9	Jan. 24	150	26 2 1 7	24 45	Good	Fair	25.00	11.00	36.00		2	10	24	50	55	
1426	Marchessaux of Jersey	Vetretcon	Jersey	885	Oct 23, '00	Apr 9	70	33 4 1 12	19 00	Excellent	Very good	25.00	3.50	31.50		2	11	24	50	55	
1427	Mrs Melrose	Dracoma 12th	Jersey	750	Nov 10, 05	Apr 2	83	23 14 0 13 1/2	24 00	Fair	Fair	15.25	4.20	19 45		2	13	3	50	55	
1428	A. Poolek	Freegrove Lily	Jersey	705	Jan. 5, '05	Apr 21	63	43 6 1 13	25 33	Good	Good	29.00	3.80	31.80	2	40	32	41	50	55	
1429	Lord Rothschild	Camdelft th	Jersey	780	Apr 9, '05	Apr 6	73	34 2 1 13 1/2	19 15	Poor	Poor	2	50	37.50	2	45	37	50	55		
1430	G. Murray Smith	Jewel	Jersey	850	May 4, '05	May 25	39	33 14 1 10 1/2	25 25	Excellent	Very good	25.75	Nil	25.75	1st Prize & B J O S Gold Medal 3rd Prize	3	1	3	50	53	
1431	J H Smith-Barry	Caprice	Jersey	875	July 25, '05	Jan.	169	43 2 1 14 1/2	27 28	Very good	Very good	30.25	13.00	43.25		3	2	27	50	53	
1444	J H Smith-Barry	Malvonia	Jersey	875	Aug 11, '05	Dec 25, '00	150	39 6 1 6	25 33	Fair	Good	27.00	17.00	44.00		3	2	27	50	51	55
1445	C Thellusson	Little Red Rose 6th	Jersey	765	Feb 26, 06	May 8	48	25 10 1 5 1/2	17 29	Good	Good	21.25	6.01	21.25		3	15	3	50	53	
1455	R Bruce Ward	Orange Lass	Jersey	870	Apr 7, '0	Mar 15	100	35 14 1 6	29 00	Excellent	Good	27.00	6.00	33.00		3	19	4	51	51	55
1456	C Thellusson	Lady Dora 4th	Jersey	740	May 8, 08	May 14	40	23 4 1 4 1/2	17 58	Good	Good	20.75	Nil	20.75	3	40	4	54	51	53	

* The "Butter Ratio" represents the number of lb of milk required to make 1 lb of butter. Ten lb of milk are reckoned as equal to an imperial gallon.

220 *Milk and Butter Tests at the Liverpool Show, 1910.*

Only 14 out of the 49 competing, in addition to the prize winners, obtained highly commended or certificates of merit, which does not compare favourably with the results of the previous years.

TABLE VI.—*Averages of Cattle Tested.*

No. of cows competing	Breed	Live weight	Days in milk	Milk	Butter	Ratio	Points
		Lb.		Lb. oz.	Lb. oz.	Lb	
9	Shorthorn . .	1302	59	49 2½	1 6½	34.35	24.78
5	Lincoln. Red do	1381	44	63 13½	2 5½	27.23	37.90
3	Devon . .	1203	72	44 2	1 10½	26.47	29.87
5	South Devon .	1546	95	56 12	1 14½	29.48	36.80
2	Longhorn . .	1435	51	43 3	1 15	22.29	32.40
3	Red Poll . .	1188	62	39 12	1 1½	36.00	19.86
2	Ayrshire . .	977	64	60 3	2 0½	29.54	35.02
19	Jersey . .	860	88	36 3½	1 10½	21.96	31.17
1	Crossbred . .	1490	71	70 0	1 15½	35.55	34.60

The next table is introduced to show how the breeds vary at the different competitions.

TABLE VII.—*Average points won by the Cattle at Derby, Lincoln, Newcastle, Gloucester, and Liverpool, with the number of cattle competing at each of those Shows.*

Breed.	Derby		Lincoln		Newcastle		Gloucester		Liverpool	
	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points
Shorthorn . .	2	37.77	4	31.70	3	46.76	6	31.36	9	21.78
Lincolnshire Red do. .	2	38.45	8	31.06	3	36.85	5	33.89	5	37.90
Devon . .	—	—	—	—	—	—	3	19.30	3	29.87
South Devon . .	2	41.40	2	37.75	3	29.88	1	12.52	5	36.30
Longhorn . .	—	—	1	33.85	—	—	—	—	2	32.40
Red Poll . .	—	—	1	31.65	—	—	3	27.56	3	19.86
Ayrshire . .	—	—	—	—	1	39.45	1	33.75	2	35.02
Jersey . .	17	37.95	14	36.61	15	35.61	18	32.68	19	31.17
Guernsey . .	2	29.25	4	33.45	1	38.25	3	34.26	—	—
Kerry . .	—	—	—	—	—	—	2	20.85	—	—

As the question is often asked, "How much milk is required to make 1 lb. of butter?" the next table has been inserted.

It shows at a glance the average number of pounds of milk which were taken at the last five Shows of the Society to make 1 lb. of butter, under the heading of each breed tested, and from these averages the last two columns have been compiled, giving a very fair estimate of the outside quantity of milk that should be required for the purpose.

TABLE VIII.—Average Butter Ratio figures or number of pounds of Milk taken to make 1 lb. of Butter under their respective breeds and headings at Derby, Lincoln, Newcastle, Gloucester, and Liverpool, and the average number of cattle tested at the five Shows, with their butter ratio figures.

Breed	Derby	Lincoln	Newcastle	Gloucester	Liverpool	The Five Shows	
						No of Cows	Butter ratio
	Lb	Lb	Lb	Lb	Lb		Lb
Shorthorn	20 53	30 94	24 94	33 43	34 35	24	31 18
Lincoln Red do.	28-80	29 21	22 30	28 23	27 23	23	27-64
Devon	—	—	—	35-72	26 47	6	31-09
South Devon	26 32	25-79	29 10	24 65	29 18	16	27 34
Longhorn	—	21 74	—	—	22 29	3	22 10
Red Poll	—	24 54	—	30 59	36 00	7	32-04
Ayrshire	—	—	28 69	28-91	29 54	1	29-17
Jersey	19 47	19 38	19-69	20 50	21 96	83	20 28
Guernsey	20 28	22 35	19-89	21 57	—	10	21-45
Kerry	—	—	—	32-35	—	2	32-35

NOTE.—In all these calculations, 10 lb of milk have been taken as representing a gallon.

III. EXPERIMENT ON THE COLOURING OF MILK AND BUTTER

Demonstrations with coloured milk and butter, having for their object the testing of the knowledge of the public on the subject, were carried out on the same lines as at previous Shows of the Society and with similar results. On each occasion it was pointed out that if a guarantee could be obtained from the vendor that the articles offered for sale, whether milk or butter, were not coloured artificially, the purchaser would be safe in concluding, all other conditions being equal, that the deepest coloured milk or butter would be the best both in flavour and quality.

It may be remembered that at the Show at Gloucester a Tintometer was used to measure the colours of various butters. Through the kindness of Mr. J. W. Lovibond the apparatus was again lent to the Society, and at Liverpool it was decided to examine various samples of milk and see if it was possible to obtain any, and what, information from the colours developed through the Tintometer.

Three samples of milk were dealt with :

1. Devon.
2. Separated milk coloured with annato to resemble the Devon milk.
3. Separated milk not coloured.

The milks for the purpose of examination were put into a tube graduated to show sections of milk from $\frac{1}{16}$ to $\frac{7}{16}$ in thickness—the special thicknesses examined being $\frac{1}{16}$, $\frac{4}{16}$, and $\frac{7}{16}$.

The following table gives the coloured glasses used, the developed colour measurements, and the percentages of black to orange and black to yellow.

COLOUR MEASUREMENTS OF MILK.

No. 1. Sample of Devon Milk.

Thickness of Section	Glasses used			Colours Developed			Percentage	
	Red	Blue	Yellow	Black	Orange	Yellow	Black to Orange	Black to Yellow
$\frac{1}{16}$	3.0	4.0	6.0	3.0	1.0 (Green)	2.0	75.0 (Green)	60.0
$\frac{4}{16}$	8.4	8.0	24.0	8.0	4	15.6	96.24	33.90
$\frac{7}{16}$	15.0	14.0	58.5	14.0	1.0	43.5	98.34	24.34

No. 2. Sample of Separated Milk, Coloured.

$\frac{1}{16}$	5.0	3.0	8.0	3.0	2.0	3.0	60.0	50.0
$\frac{4}{16}$	10.0	8.8	33.2	8.8	1.2	23.21	88.0	27.5
$\frac{7}{16}$	9.6	47.6	39.2	47.6	4.84	29.6	49.88	13.85

No. 3. Sample of Separated Milk, not Coloured.

$\frac{1}{16}$	5.6	4.5	8.0	4.5	1.1	2.4	80.36	65.22
$\frac{4}{16}$	9.2	9.0	19.0	9.0	.2	9.8	97.83	47.87
$\frac{7}{16}$	12.0	12.0	40.0	12.0	—	28.0	100.0	30.0

The next table shows by comparison (a) the decrease of black percentage between the Devon and the coloured separated milk, and (b) the increase of black percentage in the plain separated milk when compared with the Devon.

Section	Percentage of Black to Orange			Percentage of Black to Yellow		
	$\frac{1}{16}$	$\frac{4}{16}$	$\frac{7}{16}$	$\frac{1}{16}$	$\frac{4}{16}$	$\frac{7}{16}$
Devon Milk	75.0	95.24	93.34	60.0	33.9	24.34
Coloured Separated	60.0	33.0	49.58	50.0	27.5	13.85
Percentage decrease of black by colouring	15.0	7.24	43.76	10.0	6.4	10.49
Separated Milk, not coloured	80.36	97.83	100.0	65.22	47.87	30.0
Devon	75.0	95.24	93.34	60.0	33.9	24.36
Percentage increase of black by separating	5.36	2.59	6.66	5.22	3.97	5.66

From the above it will be seen that the black in the colouring material used ("annato") dies out as density increases, whilst the black in the milk increases in density under the same conditions.

The decrease of black percentage between the Devon and the coloured milk points to the use of a colouring material purer in colour than the milk, whilst the increase in the percentage of black in the separated milk when compared with the Devon is what would be expected when the butter fat has been abstracted.

It is submitted that this experiment goes to show that colour measurements by the Tintometer disclose (what cannot be determined by ordinary vision) the presence of an added colour material to separated milk.

ERNEST MATHEWS.

Little Sharncliffe,
Ancelsham, Bucks

AGRICULTURAL EDUCATION EXHIBITION.

THIS section, over which Mr. Bowen-Jones once again presided as Steward, seemed altogether as great a success as on previous occasions, and that is saying a great deal. The Exhibition being in the north, illustrations dealing with live stock took a more important position than usual, almost every exhibit from the north of England or the "Principality" showing either illustrations of work done on "breeding problems" or pictures of typical specimens of pure-bred animals, or sometimes both. It is particularly pleasing to see that our Colleges are capable of producing such good live stock; in some cases highly successful show specimens.

Every one of those who are interested in the struggles, financial or otherwise, of the early life of educational agriculture in this country, can well realise that it has been no easy matter for those responsible to obtain and maintain a high standard of perfection among the cattle, sheep, and poultry upon a College farm. Cattle and sheep are specified, for we noted with some regret the absence of the humble, but useful pig.

It may, however, be suggested that the beautiful illustrations that were presented might have been more appreciated—they certainly would have been more useful—had they been accompanied by some data concerning the breeding, rearing, and milk production of the animals portrayed. It would, for instance, be interesting to learn the rations given, the weights obtained, and the value produced, either in cash or through

offspring, of the prize stock at different ages and under varying circumstances. In the case of a milch cow her milk record might be attached to the illustration, and it would further be exceedingly useful to learn at what outlay on food the milk had been obtained in the case of the different specimens.

These remarks are thrown out as suggestions for the future and not as criticisms of present-day work. The difficulties in the past have been very great. Money being short, it has often only been possible to do a very limited number of things among the many that suggested themselves to the Governors or the Staffs of the various Colleges. Hence the obtaining and keeping of well-bred stock *as an object lesson to students* often entailed, on the part of those concerned, much skilful economy and retrenchment in other directions. Only those who have been responsible for collecting data can really know the expense involved, and to have this expense added to that of buying and breeding high-class specimens was often more than could be borne by even the most financially fortunate of such institutions. It is to be devoutly hoped that in these days of "developments" those times are over, and that accurate data about the best commercial, as well as show, stock will be forthcoming and will in future be displayed at the R.A.S.E. Education Exhibition:

The Royal Agricultural Society of England.—One bay was set apart for the Society's publications, and in the other the Woburn Experimental Station was responsible for the greater part of the exhibit. The value of the two new fertilisers that obtain their nitrogen from the air was demonstrated by wheat plants, growing in pots, to which dressings of nitrate of soda, nitrate of lime, and cyanamide had been given. A mixture of the last two was shown to be quite equal to the separate dressings, with the advantage that the difficulties due to the hygroscopic nature of the nitrate of lime were obviated, and the inconvenience from the fine particles of cyanamide was prevented. It was particularly interesting to hear of the number of visitors who recognised the weed "Spurrey" growing in the acid soil from the Stackyard Field, while it was remarkable to find how few of these had noticed the fact that the growth of this weed was a sure indication of the lime requirements of the soil. The influence of magnesia on the root and grain of the wheat plant was the subject of much interest, as were also some striking examples of the effect of manures on the mechanical condition of the soil.

The large table on the "Life of Farm Seeds" was now shown by Mr. Carruthers in its completed form, and it is to be hoped that the Society will see its way to publish the same at an early date.

The National Fruit and Cider Institute—the first exhibit in the order of the catalogue—had its usual instructive and comprehensive display. There was so much to see there that our space will not allow us to refer to all the items of special interest. We would, however, mention that those in search of such knowledge must have benefited greatly by the information afforded by the practical display of the results obtained by good and by bad pruning, grafting, budding, &c.

The College of Agriculture, Holmes Chapel.—The Cheshire College had the advantage of being comparatively near the "Royal" Showground. The staff took full advantage of the occasion and gave the visitors a very complete, excellently arranged, and skilfully displayed exhibition of the College work. It was most instructive to see the exhibit dealing with that terrible pest the black scab or wart disease of the potato. Every one knows the grave danger of ignorance when a hitherto uncommon pest threatens a general invasion such as is now the case with this disease. Any visitor of ordinary intelligence spending ten minutes in the Holmes Chapel College bay at the Liverpool Show could have made himself thoroughly acquainted with the appearance of wart disease, so skilfully and thoroughly were all the various phases of that terrible scourge displayed.

With so much that might be commented upon, it seems almost invidious to mention a particularly graphic diagram showing the results of feeding trials with soya cake and a very fine example of the injury done by that expensive pest the warble fly. Hitherto the damage done to the hides of cattle by this insect seems to have escaped the attention of the agriculturist, however much it may have agitated the feelings of the tanner. As the ravages of the pest can *easily* be checked by the farmer, it seemed particularly appropriate to find the subject so well treated at the Cheshire College stall.

The Agricultural Education Association once again had a numerous and comprehensive display of professional literature.

The University College of North Wales, Bangor, was particularly strong in its display of live stock illustrations. The number of winners bred on the College farm must have struck with wonder those who believe that academic agriculture is solely carried on by means of test tubes in a laboratory.

The University College of Wales, Aberystwyth, had a small exhibit which was, however, enough to show that that institution is in full vigour—the illustrations of which the display was chiefly composed largely relating to the College work. It was particularly pleasing to note that one item dealt with the "Effect of Harrowing," for though the turves, as shown, are too small an example to be properly representative, it is very gratifying to find that work is being done on so important a

matter as tillage, a subject so far somewhat neglected at the Colleges.

The Harper-Adams Agricultural College had an extensive and comprehensive collection on view. Much of the good work being done there has, as was to be expected, been previously on view at the "Royal." For this reason, and also because the published catalogue of the exhibit is very complete, it is not necessary to go into further detail.

Nature Study and Rural Education again took up a large proportion of the space available. The items were, however, so multifarious that within the limits of this short notice it is not possible to single out those deserving of mention. It must suffice to say that this department is in full activity and is doing excellent work.

Royal Meteorological Society, 70 Victoria Street, Westminster, S.W.—This Society contributed an interesting exhibit, illustrating their educational work. The exhibit, which comprised instruments, diagrams, charts, photographs, &c., was arranged on similar lines to those at previous Shows, local climatic information being given a prominent place. At the "Climatological Station" adjoining the Agricultural Education Exhibition building, Mr. W. Marriott gave demonstrations each day on the method of taking weather observations, which included the ascent of pilot balloons for ascertaining the drift of the upper currents of the atmosphere. Registering balloons with a meteorograph attached were sent up on June 21, 22, and 23. The balloon sent up on the 21st, which reached a height of 8 miles, fell at Kirkby Stephen, 77 miles NNE., and the lowest temperature recorded was -52.6° F. at an altitude of 6.2 miles. The balloon sent up on the 22nd fell at Kirkham, 26 miles N.; it only reached an altitude of 5 miles, when the temperature was -29.2° F. The balloon sent up on the 23rd fell near Buxton, 43 miles ESE.; the instrument, however, was not found till more than three months later. The record showed that the balloon ascended to an altitude of 12 miles, and that the lowest temperature was -59.8° F. at a height of 6.5 miles.

FORESTRY EXHIBITION AT LIVERPOOL, 1910.

THIS was the fourth Exhibition of Forestry held at their Annual Shows by the Royal Agricultural Society in conjunction with the Royal English Arboricultural Society.

Compared with that at Gloucester last year there was a noticeable falling off in the entries, which numbered only 85 as against 248 last year. This does not necessarily imply a lack of interest in this important science, but may be attributed to various causes, the chief of which is probably the time and expense involved in the collection and preparation of the various specimens.

In Class 1, for boards of Oak, Elm, Ash, and Beech, the Silver Medal was awarded to Earl Beauchamp, whose exhibit included a very fine board of oak 115 years old, grown on a clay loam soil 130 ft. above sea level. It was 27 in. wide and the growth had been remarkably rapid. His specimens of elm, beech, and ash were also very good. The Bronze Medal in this class fell to Mr. T. J. M. More, who showed four boards of fine timber that only missed the higher award by a narrow margin. The Earl of Powis was reserve, his exhibit containing the best piece of ash timber in the Exhibition. It was described as being forty-five years old, grown on a clay loam at an elevation of 650 ft., and was about 13½ in. wide, allowing for the one edge cut off.

In Class 2, for specimens of Larch, Spruce, and Scotch Fir, Mr. T. J. M. More had a remarkable exhibit that gained the Silver Medal. It included the finest larch board in the Show, which was cut from one of the historic trees planted in 1738. A splendid specimen of another of these trees will be remembered as an interesting feature of the Show at Gloucester. Earl Beauchamp took the Bronze Medal with three capital boards.

Class 3 was for specimens of any other Hardwood or Broad-leaved Tree, in which Earl Beauchamp gained the Silver Medal with boards of lime, willow, maple, plane, wild cherry, holly, birch, white poplar, brown oak, and whitebeam. The Bronze Medal fell to the Earl of Derby, whose collection included handsome boards of sycamore, alder, and poplar. Mr. Coltman Rogers was reserve with a fine specimen of alder and a board of acacia. There were also exhibited, not for competition, some boards sent by Mr. T. J. M. More equal to any in the Exhibition, also some very fine specimens of large burr oak, and the extensive well-known collection of home-grown timbers belonging to Lord Egerton of Tatton that was shown at Gloucester.

We were impressed by the fact that the fine timber shown by Mr. More and the Earl of Powis was grown on such high-lying land. Of the former, a board of elm from a tree ninety years old, growing on light loam at 700 ft. elevation, was 30 in. wide, and the oak board in Lord Powis' exhibit was 24 in. wide, cut from a tree ninety-five years old on clay loam 650 ft. above sea level. We expected to find good fast-grown timber from the favourable soil and climate and moderate elevation of Earl Beauchamp's estates, but on the other properties that we have mentioned the great altitude is doubtless balanced by the shelter of still higher ground, and the other conditions must be as suitable as at Madresfield. It would add considerably to the interest of this part of the Exhibition if the saleable contents of the trees from which the boards were cut and the length of the butt to the first branch were stated in the catalogue as well as the description of soil and the elevation.

For specimens showing the comparative quality of timber grown on different soils and situations an interesting collection gained the Silver Medal for Earl Beauchamp, who also obtained a similar honour for an instructive exhibit demonstrating the beneficial effect of pruning when well done and its injurious effects when improperly performed.

In Class 8, Earl Beauchamp was the only exhibitor, taking a Silver Medal for specimens illustrating the results of dense and thin crop in branch suppression and quality of timber. Reliable records of the distances at which trees have been planted in the past are somewhat scarce in Great Britain, which probably accounts for the perpetuation of many practices that would have become obsolete had exhibits such as this been available for the information of intending planters. Yet another Silver Medal was gained by Earl Beauchamp for examples of damage done by rabbits, voles, squirrels, &c., and by abnormal growths.

Articles not for competition included a very beautiful collection of dried leaves and inflorescences of trees gathered from the neighbourhood of Stanage Park, for which a Silver Medal was awarded to Mr. Coltman Rogers. The Judges consider that this was one of the most interesting and instructive features of the Exhibition, and regret that it was not in their power to award a higher distinction. Bronze Medals were given to King's Acre Nurseries, Ltd., Hereford, for a collection of growing forest trees and specimen coniferæ, including some beautiful Japanese acers, several handsome yews, and scarce conifers; to Earl Beauchamp for a collection of seeds and seedlings; and to Messrs. Remer & Co. for specimen boards of various timbers grown at home and abroad.

The Gold Medal for the best general collection of exhibits was easily won by Earl Beauchamp, who is fortunate in having in his service such an enthusiastic forester as Mr. Slater, who must have given much time and labour to the preparation of the various collections from the Madresfield estates. Mr. T. J. M. More's collection was adjudged the second best.

In the classes for Estate Gates, Mr. More gained Silver Medals both for oak and larch gates, and Earl Beauchamp the Bronze Medals. The Judges consider that in both classes the gates were unnecessarily heavy, and that in most cases the cost at which they were said to have been made was under-estimated. In any future competitions it would be desirable to have the gates made a uniform width. Earl Beauchamp secured the Silver Medal for a hunting gate with a simple and efficient catch, and the reserve went to Mr. More.

In Home-grown Creosoted Timber, Earl Beauchamp was the only exhibitor, and won another Silver Medal. It was interesting to see how thoroughly the specimens of Corsican pine, beech, and alder had been impregnated and made suitable for fencing and other estate purposes.

In Class 14, the Judges had some difficulty in deciding between the respective merits of fences made rabbit proof for nurseries and plantations and other fences where this is not essential. Having obtained permission to subdivide the class, a Silver Medal for the former was awarded to the Stanley Underwood Company, Ltd., Haslemere, for their well-known cleft chestnut pale fencing with rabbit wire, and another to Messrs. Armstrong, Addison & Co., of Sunderland, for a collection of fences constructed of creosoted timber, but not proof against rabbits. The question of cost influenced the Judges in deciding on the merits of the respective entries in this class. Mr. Thomas Page, of Bottesford, Notts., exhibited the "Pittsburgh Perfect" fences, constructed of steel wires, in which the stays are electrically welded to the strands, producing a complete amalgamation of the wires at the joint, which is claimed to be indestructible. The price, including erection, was given at 1s. per yard, including creosoted wooden posts.

The Forestry building contained many other collections that attracted considerable attention from a number of interested visitors, but of which considerations of space prevent full descriptions, and the walls were hung with photographs of specimen trees and woodland landscapes, illustrating tree growth and various operations of forestry.

It is a matter for regret that there was no exhibit showing the beautiful effect of many of our home-grown timbers when made into high-class furniture and decorative panelling, such

230 *Plantations and Home Nurseries Competition, 1910.*

as the admirable collection of Mr. H. J. Elwes, that was, perhaps, the most illuminating feature of the Forestry Exhibition at Gloucester.

The Judges wish to express their thanks to the stewards, Messrs. George Marshall and C. Coltman Rogers, for their courtesy and assistance, as well as for the excellent manner in which they had arranged and staged the various exhibits. They were also in constant attendance, and their interesting explanations were highly appreciated by visitors to the Exhibition.

ROBERT ANDERSON.

Gloucester

PLANTATIONS AND HOME NURSERIES COMPETITION, 1910.

IN addition to the Plantations Competition which the Royal Agricultural Society in conjunction with the Royal English Arboricultural Society has for two years promoted in connection with the Forestry Exhibition there was in 1910, for the first time, a series of classes for home nurseries. Eight silver medals, eight bronze medals and cash prizes were again offered in the Plantations Competition, whilst four classes with two prizes each were arranged for the Home Nurseries. In addition the Arboricultural Society offered a gold medal for the best managed plantation in the whole series. The competition was open to Lancashire, Cheshire, and the six counties of North Wales.

Districts and Estates visited.—There was in the stretch from Abbeystead, near Lancaster, to Welshpool to the south, a great variety in the conditions affecting the growth of trees. Altitudes at which plantations stood varied from 40 feet above sea-level near Ormskirk, to over 900 feet on the Hafodunos estate, near Llanrwst. Two plantations were entered for Lancashire, two for Cheshire, four for Denbighshire, one for Carnarvon, and one for Montgomeryshire. The forestry operations were variously managed by the owner himself, by the agent, or by a head forester. In some instances the object of planting was to secure game cover, or to give beauty to the landscape, in others to form shelter belts, but in some cases the growing of timber was the main object. According to the object the management of course varied. But in every case there was, more or less, an evident enthusiasm for the work, and a desire to get into the best methods.

The estates belonged, one to the Crown, one to Liverpool Corporation (nurseries only entered), and the rest to private owners, and in each case the remark as to keen interest in the work on the part of those in control applies.

Soils.—The qualities and constituent parts of the soils and sub-soils varied greatly. One plantation only was on really "rich" soil, that belonging to the Earl of Derby near Ormskirk. The *present* results of production here, on land adjoining agricultural land let at 20s. per acre, were not proportionately as good as those on land of a letting value of under, say 10s. But, as the ultimate crop will be hardwoods, and it is fairly near to a good market, the final results will probably justify the cost at these early stages of the formation of the plantation. There are instances elsewhere of plantations on ground of similar value, judiciously managed, which are paying quite as well as those on "poor soils." Ash, sycamore, beech, elm, and even oak will probably give a reasonable profit under proper management under these conditions, and especially good ash. This species has also the useful property of self reproduction to so marked an extent as to make it extra valuable because of its reducing the cost of starting succeeding crops to almost a minimum. Unfortunately it is extremely liable to attacks by ground game in hard wintry weather. It is a tree which thrives fairly well within a somewhat smoke-polluted atmosphere, as do also wych elm, sycamore, and beech, and as these produce timbers which are in demand in manufacturing districts, their usefulness in such areas is almost self-indicative. The Ormskirk plantation is on a nearly flat surface, the soil is very good and varies from a brown loam to a light sandy soil. The ash, sycamore, and alder are thriving very well indeed, as are also the few oaks. The planting was done thirteen years ago and there have been two thinnings, for the sake of game, which has been one too many from a forester's point of view. The average height of the hardwoods is about twenty feet. The average girths at breast height are, for ash $9\frac{1}{2}$ in., sycamore $8\frac{1}{4}$ in., and alder $8\frac{1}{2}$ in. The ash has beautifully smooth bark, indicating a high quality of timber. The larch is practically all dead, dying, or removed—evidently killed by the larch aphid, and the Austrian pine is rapidly disappearing owing apparently to the same pest. The same remarks apply to the few spruce. But as these conifers were only planted as nurseries, the circumstance is of little moment. Ash and sycamore are to form the ultimate crop, and as both are in great demand within a reasonable distance the management bids to give successful results. The notes on this plantation are at some length because (1) it was the only one on very good soil which was in the competition (Delamere, although on good soil, was not so decidedly such as Ormskirk), and (2) it is not generally realised that there are circumstances under which it will pay to plant good land; and when the shelter value to adjoining agricultural areas is also taken into consideration it will be seen

to be of a parallel nature to forming a walled garden in a productive district.

The rest of plantations entered were on much poorer soils of greatly different natures. That at Abbeystead in Wyresdale, Lancashire, the property of the Earl of Sefton, is chiefly on peaty loam on clay, but in places sandy, overlying the millstone grit. As the rainfall here is fairly heavy (52 in.), the porosity of the underlying rocks, once the water reaches them, is of value in preventing chill to the trees. Besides, the plantation generally is on fairly steep slopes and has been drained by open grips where necessary, so that the storm water has a good chance of getting away. There is some possibility of erosion, but as the plantation has been thinned (too much for overhead canopy) in order to encourage undergrowth for the game, the grasses, &c., will not allow much damage by washing. The general aspect is south. The principal objects of the plantation are the promotion of game covert and ornament to the hill-side. The moors above are bleak, high, peaty, and mostly unenclosed. The vegetation thereon is heather, bracken, cotton grass, and sphagnum. The peat in places covers the remains of a former birch forest which appears to have grown on a thin soil just covering the grit stone, at an altitude of 1,600 to 1,700 feet.¹ On other parts of the Pennines the writer has seen stumps of oak at 1,400 feet. It does not necessarily follow that trees would grow there to-day, even if the peat were drained or denuded. It may be that the climate has altered since those remains were living. But the subject has by no means been exhausted in research and discussion. In the cloughs and gills the trees grow at considerable altitudes, and in at least one situation further north near Ashgill, we have fairly thriving plantations at 1,750 feet above sea-level, where they are dense enough to provide natural shelter to the individual trees. The presence of bracken and heather is generally supposed to be indicative of a soil, &c., which will grow trees. The Wyresdale gorge below Abbeystead is thickly wooded with fine oaks, elms and other trees, and the Hodder Valley and others lying north of the local fells have thriving woods and plantations, and about half a mile above the valley from the plantation inspected, Mr. A. Wilson, F.L.S., F.R.Met.Soc., reports one of the finest lime trees he has ever seen, which again indicates that shelter is of more importance than soil alone. There is one point, however, which must be noticed. The mild humus of the former forests has in places been replaced by the acid humus of the peat bogs, which is distinctly unfavourable to tree growth. It may be added that the millstone grit, where covered with mild humus in the

¹ *The Flora of West Lancashire*, Weldon & Wilson, 1907, pp. 45 and 46

valleys and lower hill-sides grows very fine crops of deciduous trees and of many conifers.

At Delamere, in Cheshire, a Crown property, the soil is peat and sand, the peat having been formed in the bottoms of former "meres," and the sand having formed the banks of these little lakes. It was noticeable, as pointed out by the forester, that, where the sand had been intermixed with the peat by "snigging" operations during the removal of previous crops of trees, the young (eleven and twelve years) trees had a better thrive on them. The nature of the "peat" here was probably very different to that found on the moors, as the plantations had made fine growth. In places there was a layer of "fox-bench," which seems to correspond with the "moor-pan" of the fells.¹ On the higher sandstone banks of the Delamere Forest there were remaining some patches of oak which showed that there had at one time been a good crop of this species. It may be worthy of mention that in the Reports of the Commissioners of Woods and Forests of the middle of last century there are indications of local mismanagement. At present in Harthill, where twelve years planted Corsican and Scots pine are mixed, the Corsican is decidedly ahead, by quite 1½ feet in average height. The roads at Delamere are good, and ground game is kept down.

In Denbighshire the soil in the plantations visited was light gravel over slaty, shaly rock. At Hafodfawr, a Crown estate near Festiniog, peaty on shaly clay and marl: and in Powisland, near to Powis Castle, it is clayey loam over millstone grit, red sandstone, and silurian. In the plantation inspected there the soil is deep at the lower elevations and thin at the top.

Rainfall.—This varies as follows:—

Abbeystead, 52 in.

Ormskirk, 32½ in.

Delamere, 29 in.

Hafodunos, 36 in.

Hafodfawr, 90 in.

Powis Castle, 40-50 in.

Altitudes.—These varied from 40 ft. near Ormskirk to 907 ft. at Hafodunos. At the latter place it was evident that the highest altitude suitable for forestry had not been reached. Of course, altitude by itself is not the only determinative factor for success. Much depends on shelter, rainfall, porosity of soil, &c, combined with elevation.

¹ Peat is formed by the accumulation of plant remains in pools or lakes of standing water. The plants growing in lowland districts are of generally different species to those occurring on the heights. The formation of moor-pan is by the growth of slimy algae lichens and small liverworts, which seem to consolidate the sand into an impervious stone, on which a thin layer of peat may form from the invading mosses, &c.

The various plantations were returned as at the following altitudes :—

Abbeystead, average 700 ft.

Brinscall, 650 to 680 ft.

Ormskirk, 40 ft.

Delamere : Blakemere, 260 to 270 ft. ; Harthill, 120 ft.

Hafodunos : Fox Covert, 700 ft. ; Clypian Pl., 800 ft. ; Tany-fford, 880 to 907 ft. ; Penrhyn, 660 ft.

Hafodfawr, 750 ft. average.

Vyrnwy, 850 to 900 ft.

Powis Castle, 800 to 850 ft.

As to the effect of altitude it may be here mentioned that Col. Sandbach's "Clypian" plantation was awarded the Gold Medal of the Royal English Arboricultural Society as the best managed one entered for competition. Of course the difficulties were taken into consideration, but the fact indicates what may be done at considerable altitudes. It may also be mentioned that the beautifully wooded aspect of Col. Sandbach's estates marked them out distinctly, especially at the higher altitudes, from nearly all the surrounding country, and the advantages to the adjacent agricultural land because of the shelter afforded, has evidenced itself in the increased rentals. As was pointed out in connection with last year's competition, the advantage of a shelter-belt in the increase of an area to be further afforested is of great importance.¹

In "Clypian" plantation (top portion, planted twelve years, at 800 ft.), previously bare mountain, worth 1s. per acre per annum, some average dimensions were about as follows :—

Larch : height, 20 ft. to top ; girth at breast height, 12 in.

Austrian pine : height, 12 ft. to top ; girth at breast height, 9 in.

Spruce (not thriving).

In the lower portion, planted eighteen years, at 700 to 800 ft. altitude, on mountain land, there were these average dimensions :—

Larch : height, 30 ft. ; girth, 18 in.

Sycamore ; height, 30 ft. : girth, 11 in.

A few *Tsuga Albertiana* poles are doing fairly well. This plantation has been once thinned, very judiciously, and has a very good crop. It is the one which gained the gold medal.²

¹ One would like to see the result of an attempt to gradually extend the Ashgill plantations at higher altitudes under the shelter of the belts which at present struggle up to over 2,000 ft, almost in the form of "elfin" trees.

² There were other deeply interesting plantations on this estate, not available for competition, besides the fine collection of examples of rare species of great dimensions about the home grounds. A few examples may be given from the plantations as bearing upon altitude :—*Præa nobilis* and *Araucaria imbricata* at 950 ft. A plantation at nearly 900 ft. dating from 1884, on the

Aspects.—These were as follows :—

Abbeystead, south, considerable slope.

Ormskirk, flat.

Delanere : Blakemere, east, partly protected north-west ;

Harthill, level, with sandy banks north-west and south.

Hafodunos : Clypian, west, considerable slope ; Tan-y-fford,
on level ; Fox Covert, south : Penrhyn, north.

Hafodfawr, north and west.

Powis Castle (Umbrella Pl.), north.

Selection of Species with reference to Environment.—Conditions varied greatly over the area visited, as has been before remarked. Special reference must be made to the Mid and South Lancashire district. It was quite noticeable how comparatively treeless this was, except in the valleys and cloughs sheltered from the prevailing westerly winds. North of Preston this could not be because of smoke impurities, because we get beyond the region of great towns. (Even in this northerly portion, however, although the smoke is not sufficient to injure phanerogams, it considerably affects the mosses and lichens). The observations of Mr. A. Wilson, recorded in the *Meteorological Magazine* for January 1895, and the *Flora of West Lancashire*, 1907, pp. 65 and 66, point to sea-spray borne far inland during high gales, as being a frequent cause of the death of or injury to conifers. Still, in the low lying lands (especially centrally and northward) there have been found buried in quantity large trunks of Scots pine as well as oaks. However, when the westerly winds are very strong they come heavily laden with salt spray from the Irish sea. The whole of the plain from the Mersey to Carnforth is affected by them. North of Carnforth the spray is deposited on the intervening Walney Island and the Barrow peninsula. The salt deposited is very injurious to evergreen plants. Mr. Wilson, after the great gale of December 22nd, 1894, collected and examined by analysis, the deposits made on trees and shrubs seven miles from the sea. They yielded sea salt to an amount equal to 1½ oz. per gallon. It resulted in killing the branches of yew and other evergreen trees exposed to the west and north-west. The protected cloughs and gills among the hills were not affected nearly so much as the plain.

The other factor in relation to this district is that mentioned above, viz., the poisonous effect of the smoke fumes from the manufacturing towns and villages. With southerly, south-site of an old wood, contained spruce up to 50 ft. in length, and with an average breast-high girth of 20 in. ; Spanish chestnut 35 ft. by 15 in. average ; Austrian pine 35 ft. by 25 in. average ; Corsican 35 ft. by 21 in. average ; Sycamore 40 ft. by 15 in. average ; Scots pine 28 ft. by 18 in. average ; *Abies Nordmanniana* 40 to 45 ft. by 26 in. average ; *A. grandis* (a suppressed tree) 30 ft. by 12 in. ; *A. nobilis* 40 ft. by 30 in. average. The larch were poor and dying

easterly, and easterly winds these sulphurous fumes are brought from S. Lancashire and the West Riding, sufficiently to blur the landscape. It has been shown by Mr. Wilson's observations to the east of Leeds that the effects on vegetation can be plainly traced for at least fifteen miles. A few years ago one thick dirty fog in December killed most of the fine leaved mossy saxifrages and even much grass on poor soil for miles around Leeds and Bradford and injured laurels, &c.

Deciduous trees, by casting their leaves each year, escape much more easily from the results of these chemical deposits, so that it is a well-known principle to select them for planting in such areas in order that the principal crop shall be of non-conifers. Austrian pine, and in a less degree Scots pine, stand the smoke best of the conifers. As we get further north in Lancashire, *e.g.* on Bleasdale Fell (at 750 to 1,100 feet), and in Foxdale (at 600 to 800 feet), there are fine and fairly old plantations of Scots pine. On exposed hill-sides they are sometimes destroyed by severe west or north-west winds after forty or fifty years' growth. It is interesting to notice that a 10-acre plantation of old Scots pine in Upper Claughton, which was completely levelled by wind, has been succeeded by a luxuriant natural growth of birch. Still, the planted birch at Abbeystead has not done well. As a rule birch is plentifully self sown on the grits, the light seeds being wind-borne.

Taking the range of the whole district visited, it was found that larch, Scots pine, and Corsican pine were the most frequently planted of the conifers. Next came Norway spruce, Austrian pine, and Douglas fir. Wherever the Weymouth pine was seen, it was looking unhealthy, probably because of the attacks of the fungus *Peridermium Strobi*.

Among deciduous trees very little beech was seen, which is rather surprising, because where it did occur on the millstone grit it was doing well, and there is a good market for it in South Lancashire and the West Riding. A mixture of larch and beech, where soils and atmosphere are suitable, is likely to be profitable. If the larch be attacked by canker there is a sufficient remaining crop of the hardwood, and the larch thinnings find a ready market. No example of this mixture was met with. Where Japanese larch was mixed with European, it had outgrown the latter and the tops were mounting tortuously, exposed to the wind. Several instances were seen where quick growing species of conifers in the older plantations had got up above the general canopy and were both suppressing the growth of their companions, and themselves suffering in the tops from exposure.

For planting as shelter belts around the hill-side farm houses, long experience has shown that sycamore is the ideal

species for the ultimate crop. Many instances were seen. It is comparatively seldom found to lose its round head and upright form even in exposed situations.

Some idea as to the effect of a few mixtures in planting may be gained from the average dimensions given before.

Plants and Planting.—Generally speaking, in all the plantations examined the work had been well done. This was doubtless the cause of the results being such as to warrant their entry into the competition. Thick planting was usually adopted, the distances of the trees apart being originally 3 ft. to 4 ft. 6 in., chiefly 3 ft. to 4 ft. Notching and pitting were both resorted to, and in one case the planting mattock had been employed.

The ages of the plants when put in varied as follows:—

Abbeystead, 2 years—2 years.

Ormskirk, 4 years.

Delamere, Blakemere, 2 years—2 years.

Delamere, Harthill, 2 years—2 years.

Hafodunos, Clypian, 4 years.

Hafodunos, Tan-y-fford, 3 to 4 years.

Hafodunos, Fox Covert, 4 years.

Hafodunos, Penrhyn, 4 years.

Hafodfawr, 3 years.

Powis Castle, Umbrella Pl., 2 years.

The cost of plants, planting, and fencing was returned as:—

Abbeystead, plants and planting, no record; fencing, stone walls, 7s. per rood, exclusive of stone-getting.

Ormskirk, plants and planting, 7l. 5s. per acre; fencing (wire on iron supports) 1s. 2d. per yard.

Delamere, Blakemere, planting and fencing, 6l.

Delamere, Harthill, planting and fencing, 6l.

Hafodunos, Clypian, planting, 6l. No return as to fencing.

Hafodunos, Tan-y-fford, planting, 7l. No return as to fencing.

Hafodunos, Fox Covert, planting, 7l. Fencing existent.

Hafodunos, Penrhyn, planting, 7l. No return as to fencing.

Hafodfawr, plants and planting, 19l. 11s. 8d.; fencing, about 2l. 10s. per acre.

Powis Castle, Umbrella Pl., plants and planting, about 10l., including fencing.

The extraordinary cost of the Hafodfawr planting and fencing is accounted for by "heavy and continuous snowfall at the time of planting, impeding haulage of fencing materials, &c., and keeping planting staff idle, the labourers, who came from a distance, being kept on awaiting thaw." The plants are

now pitted and planted much more economically, at the cost of 17s. per 1,000.

In most examples the plantations had been wire-netted against rabbits, but in some instances the mistake had been made of removing the protection too soon, generally in order to use it elsewhere. This is not often a true economy.

Annual Maintenance for first four years cost as follows :—

Abbeystead. Not known.

Ormskirk, 3l. 10s.

Delamere, Blakemere, 5s. per acre annually.

Delamere, Harthill, 5s. per acre annually.

Hafodunos, Clypian, under 1l.

Hafodunos, Tan-y-fford, about 1l.

Hafodunos, Fox Covert (wanted for fox covert), nil; result, much overgrown by brambles, whins, &c.

Hafodunos, Penrhyn, 18s.

Hafodfawr, 5l. in cleaning during first 2 years.

Powis Castle, Umbrella Pl., nil.

Insects, Fungi, Game, and Fire.—The larch aphid was generally present, but less so in Wales than further north. The pine-shoot tortrix moth occurred at Delamere, but hand-picking and burning the caterpillars was successfully tried, and will be continued if necessary. The pine beetle occurred in Scots pine shoots, but up to now only to a slight extent. Here and there were occurrences of the new and apparently formidable *Argyresthia laevigatella*.

Of the fungus pests, larch canker (*Peziza Willkommii*) was found in nearly all the plantations, occurring both on European and Japanese larch, although less so on the latter, and it was not so common in Wales as in Lancashire. The honey fungus (*Armillaria mellea*) and root fungus (*Fomes annosus*) had in several cases attacked Scots pine. Trenching had not been a success: pulling up and burning the trees was more operative, but did not always get thoroughly rid of the mycelia in the soil. Scots pine needles in another plantation were seriously attacked by rust (*Peridermium pini* - *Coleosporium senecionis*) to such an extent as to give the plantation a yellow appearance in great patches. The acidospores are on the pine needles, and the uredo- and teleuto-spores on the groundsel, of which, say the authorities, "all the species in the district should be destroyed."

As has been before remarked, the direct damage by game was generally slight. Indirectly, by causing too early thinning, it was of more consequence, but the fact that rabbits and sylviculture are irreconcilable is being more and more recognised. Where the forester had control of the rabbits the damage was small.

There were two instances of damage by fire. In one case the value of wide rides was vividly illustrated. The whole of a young plantation would have been destroyed had it not been that the gap formed by rides enabled the men to confine the fire to one quarter.

The possibilities of tree-growing on the Welsh and Lancashire hills as well as in the lowlands on suitable areas were very striking, as was also the keen interest taken in the subject by those directly responsible for the present working of the plantations visited. The awards in the competitions will be found stated, both for plantations and nurseries, on pp. cxx and cxxi.

Home Nurseries.—The new departure in offering awards for home nurseries was very encouraging in its results. Entries from three estates were received. The Liverpool Waterworks Committee entered their Brinscall (Lancs.) and Vyrnwy (Montgomeryshire) nurseries, and the Crown Forests their Delanere (Cheshire) nurseries, in each case for several classes. In all cases the management was excellent, and had resulted in fine crops of seedlings and transplants. The soils varied—peaty and clayey loam was occupied at Brinscall, good loam at Delamere, and loamy clay and peat at Vyrnwy. Millions of trees are being raised—*e.g.*, at Brinscall 14 cwt. of beech mast was sown in 1909 with a fine result. (There was, by-the-by, no class for one year old seedlings, an oversight which ought to be rectified in future competitions.) Although the atmosphere at Brinscall is far from being a pure one, owing to the proximity of factories &c.,¹ the young plants were doing well. The forester in charge was suspicious that the raising of oak after a crop of potatoes was not so successful as it ought to have been, because of the potato disease rotting the acorns. This matter ought to be investigated. Sulphate of potash has been successfully used on some of the seed beds. A very thorough system of bookkeeping and recording generally has been instituted on the Rivington Afforestation Works.

The visit was too early for the judges to see any results from the sowing of the present season's stock of some species, especially ash, beech, and oak. This remark applies to all three districts.

At Delanere damage was somewhat extensive among the sown acorns and young oaks caused by jays and cockchafer grubs respectively. Red-leading the seeds had been resorted to at all the nurseries in order to prevent robbery by birds, and where it was done, the results were successful. Voles were responsible for some damage.

¹ On the Rivington plantations on the same estate, wire netting is quickly corroded by the acids in the air.

The nurseries at Vyrnwy are worth a long journey to visit, as are also the extensive plantations which the Liverpool Corporation are forming there around their beautiful artificial lake.¹

The advantages arising out of the establishment of home nurseries are great. The plants are acclimatized from the first, they do not bring disease, and they can be lifted as required, without running the risk of travelling long journeys in frosty weather, or being sweated to death by lying a long time in bundles in trenches as they are sometimes allowed to do.

The Societies are to be congratulated on the educational influence of their competitions, which cannot but have a great effect upon the knowledge of timber growing by the general public, as well as those more intimately interested, as the Show is year by year moved from one part of the country to another.

Calverley, near Leeds.

SAMUEL MARGERISON.

FARM PRIZE COMPETITION, 1910.

THE Farm Prize Competition, held in connection with the Liverpool Show of 1910, comprised the areas of the two counties of Lancaster and Chester.

Prizes were offered for the best-managed farms in these two counties, in the following classifications :—

CLASS I.—Farm, chiefly Arable, of 150 acres or over, exclusive of Fell or Tidal Marsh Land. First Prize, 100*l*. Second Prize, 50*l*.

CLASS II.—Farm, chiefly Arable, of not less than 50 acres and under 150 acres, exclusive of Fell or Tidal Marsh Land. First Prize, 50*l* Second Prize, 25*l*.

CLASS III.—Stock or Dairy Farm, of 150 acres or over, exclusive of Fell or Tidal Marsh Land. First Prize, 100*l*. Second Prize, 50*l*.

CLASS IV.—Stock or Dairy Farm, of not less than 50 acres, and under 150 acres, exclusive of Fell or Tidal Marsh Land. First Prize, 50*l*. Second Prize, 25*l*.

An entry fee of 2*l*. was charged to members of the Society, in Classes 1 and 3, and 4*l*. to non-members. In Classes 2 and 4, an entry fee of 1*l*. to members of the Society, and 2*l*. to non-members. Under the conditions of entry, the competition was limited to tenant farmers paying a *bond-fide* rent for at least three-quarters of the land in their occupation. In the case of a

¹ It is now generally acknowledged that great benefits accrue from planting water-catchment areas. The trees take the place of farms with their dangers of polluting the water: they condense and bring down fogs from the air, they prevent evaporation from the ground, they prevent great and sudden rushes of storm-water, and at the same time prevent a vast amount of silt being carried into the reservoirs, and, both by the covering of leaves and by penetration of the roots, help the water to percolate the soil and thus give it a considerable filtration.

Border Farm being partly in one of the above-mentioned counties, and partly in an adjoining county not included in the competition, such farm was considered eligible, provided the homestead and at least half of the land were situated in the area of the competition.

In assessing the proportion of arable and grass land on the occupation, the fell or tidal marsh land was not included. All land that had been laid down to pasture for ten years was considered as permanent pasture. Competitors were required to give full particulars of all the land in their occupation, and it was necessary that all land should have been in their occupation for not less than two years.

The gentlemen appointed to judge the farms were Mr. C. Edward E. Cooke, of Bygrave Manor, Baldock, and Mr. John Myatt, of Lynn House, Lichfield. The Judges were requested to especially take into consideration the following points:—General management with a view to profit; system of cropping; cleanliness and management of both arable and grass land; quality and suitability of live stock, especially that bred upon the farm; the state of fences, gates, roads, general neatness, and state of cottage or cottages so far as tenant is liable; the mode of book-keeping followed (if any); management of the dairy and dairy produce where dairying is pursued; the duration of the tenancy.

There were five entries received for Class 1, ten for Class 2, four for Class 3, and five for Class 4.

The first tour of inspection was made in the month of February, and the second during the last week of May.

The awards of the Judges were announced at the meeting of members of the Royal Agricultural Society in the Show-ground on Thursday of Show Week, and were as follows:—

IN CLASS I.

First Prize. Mr. Robert Shepherd, Parkside, Aston, Preston Brook
Second Prize Mr. W. H. Carter, Moss Hall, Carrington, Manchester
Reserve.—Mr. Joshua Ball, Southworth Hall, Warrington.
Highly Commended.—Mr. T. Smith, Union Bank Farm, Bold, nr. Widnes.

IN CLASS II.

First Prize.—Mr. J. Almond, Buckley Hill Farm, Sefton, near Blundell-sands.
Second Prize.—Mr. S. T. Rosbotham, Stanley Farm, Bickerstaffe, Ormskirk.
Reserve.—Mr. E. J. Turton, Landican, Woodchurch, Birkenhead
Highly Commended.—Mr. J. Pennington, Ash Farm, Dunham Massey

IN CLASS III.

First Prize —Mr. Thomas C. Goodwin, Henhull Hall, Nantwich.
Second Prize.—Mr. S. S. Raingill, The Grange, Ringway, Altrincham
Reserve.—Mr. W. Cookson, Alpraham Hall, Tarporley.
Highly Commended.—Mr. Isaac A. Brown, Bidley Hall, Tarporley.

IN CLASS IV.

First Prize—Executors of the late John Blackshaw, Blue Coat Farm, Hatton, Warrington

Second Prize.—Mr. Thomas Croskell, Bank House Farm, Glasson Dock, near Lancaster

Reserve —Mr. Thomas Abell, Whitening House Farm, Bradwall, Sandbach.

FIRST PRIZE FARM IN CLASS I.

Occupied by Mr. Robert Shepherd, of Parkside, Aston, Preston Brook.

There are two farms in Mr. Shepherd's occupation, comprising 641 acres, arable and pasture. The one named Parkside, at Aston, near Preston Brook, which consists of 272 acres of arable land and 158 grass land, is held on a yearly tenancy under Hervey Talbot, Esq. The other, Grinsome Farm, at Ince, near Chester, which consists of 96 acres of arable land and 115 grass land, is under yearly tenancy from Mrs. Park Yates, of Ince Hall.

The land at Parkside varies from red loam to a strong clay loam, with meadows on sea sludge.

The cropping for 1910 was approximately as follows :—

72 acres	.	.	.	.	Potatoes
53 "	.	.	.	.	Clover (1st Year's Seeds)
32 "	.	.	.	.	Clover (2nd Year's Seeds)
86 "	.	.	.	.	Oats
45 "	.	.	.	.	Wheat
24 "	.	.	.	.	Mangolds
58 "	.	.	.	.	Permanent Pasture
60 "	.	.	.	.	Temporary Pasture

The system of farming pursued is not based upon any particular rotation. The chief item is the potato crop, for which the red loam soil is particularly suitable. A large and lucrative business is done with both early and late varieties. Potatoes are generally grown after clover ley and temporary pasture; they are followed by a corn crop undersown with "seeds," which are left down for perhaps two years. The first crop of "seeds" is hayed and the second grazed. For temporary pastures, the following is the mixture used :—

$\frac{1}{2}$ bushel of Italian Rye Grass
$\frac{1}{2}$ " Perennial Rye Grass
8 lb. Broad Red Clover
4 " Alsike
2—4 lb White Clover

If it is intended to leave the seeds down for a second year, 2 lb. of cocksfoot and 2 lb. of meadow fescue grass per acre are added to the above mixture. Occasionally the red clover is reduced, and about 3 lb. per acre of cow grass substituted. It is considered profitable to sow a heavy mixture, because of the better grazing and for the fibre with which it fills the soil.

The difficulty about early potato growing is to get "weight" with the first consignment; however, the price obtained for the early consignments is so much higher that the sacrifice in weight is fully recompensed.

The boxing system of raising seed potatoes is pursued in lofts set apart for the purpose. There are here about 5,000 boxes, stacked in lots of twelve, one upon another. These boxes are regularly moved, so that the sprouting of the seed potatoes may be equal. Ventilation is an important point, in order that a current of air shall pass through the loft. The boxing system entails a heavy initial outlay, but, with reasonable care, the boxes should last for a long time. The smallest tubers are used for the earliest crops, the next size for the second earliest crops, and the largest for the main crops. The object should be to secure from the smaller seed two or three well-grown tubers per root, rather than a number of small ones, as it is very important in the first "earlies" to have as many potatoes of marketable size as possible. The varieties of first "earlies" grown are Ninetyfolds, Epicures, Sutton's Early Regent, and New Century; for second "earlies," British Queen, and for the main crop, Up-to-Date. This season the early varieties are rather less than usual in their acreage. From June 17 to 21 is the time when the first lots are ready to be lifted, and these are sent off to the Lancashire markets. Planting generally begins about the third week in March, depending upon the condition of the soil and the weather, and is usually completed in a month. The main-crop sets are frequently planted between the drills of the earlier varieties, so that when the "earlies" are removed the main crops have become well-established plants, which quickly go ahead under the more favourable conditions of air, soil, and space, due to the removal of the "earlies."

Two hundred and twenty thousand ox cabbages are planted for the dairy stock, on about 10 acres, between the potato drills, so that they get a good start before they are earthen round by the mould coming from the potato rows, when the latter are lifted. The remaining potato ground is sown with catch crops, turnips, rape, mustard, &c.

The holes for the potatoes to be placed in are made by machines in two drills at once, 12 in., 15 in., or 18 in. apart, according to the size of the tubers to be used. The single drills are 26 in. apart, and the double drills from 32 in. to 34 in., the latter, of course, being those in which another crop is sprouting while the first is maturing.

The manure applied for the potato crop consists of, per acre: 20 tons of farmyard manure in the spring, $\frac{1}{2}$ cwt. of sulphate of ammonia, $\frac{3}{4}$ cwt. of sulphate of potash, 3 cwt. of

superphosphate, and 3 cwt. of organic manure prepared by the Manchester Corporation, two-thirds of the artificial dressing being applied before planting and the remaining third when earthing up the potatoes for the last time, which also helps to stimulate the cabbage plants planted in between the rows.

Swedes are manured with 15 tons of farmyard manure and 5 cwt. of superphosphate or 5 cwt. basic slag per acre.

Wheat and oats are not manured, as the land is in good heart for them.

Twenty tons of farmyard manure and 8 cwt. of kainit are applied per acre in the autumn for the mangold crop. In the spring, before sowing, 5 cwt. of organic manure, 3 cwt. of superphosphate, and 1 cwt. of sulphate of ammonia are given, and as a top dressing in July, 2 cwt. of salt and 1 cwt. of sulphate of ammonia.

The pastures are treated from time to time with 5 cwt. of boiled bones and 3 cwt. of superphosphate per acre, and mowing seed grasses receive 8 cwt. per acre of a mixed organic manure, containing 4 per cent. nitrogen, 12 per cent. phosphates, 1 per cent. potash. Temporary pastures receive 5 cwt. per acre superphosphate.

The general system of farming near the large towns in the counties of Lancaster and Chester is to sell everything off the farm, and maintain the fertility of the land by dressing it heavily with manure, which formerly could be cheaply obtained and hauled from the towns. Thus one finds many farms without any stock. The manure comes from stables, abattoirs, and other sources, and in certain favoured districts is delivered in large quantities at cheap rates by canal. On this farm, however, it is found better and more economical and profitable to keep a dairy stock and make manure at home by consuming the produce, and thus avoid the ever-increasing difficulty of obtaining town manure of uniform and good quality in sufficient quantity. The cost of manure on the farm is naturally very heavy when so much is made and artificials used so freely, and is estimated at 2*l.* per acre.

The dairy herd is an important feature in the working of the Parkside Farm. About 250 milking cows are kept in winter, and from 200 to 240 during the summer. Three bulls are kept. During March and April, when milk is plentiful, about thirty heifer calves are reared to take their place in the herd—this being a home insurance to cover losses, &c.—and some fifty cows are bought in each year; thus the herd is practically renewed every four years. At other times the calves are all sold weekly, there being a good local demand for young calves for rearing purposes. Calves are kept on

the cow for four or five days and given milk for three weeks. Twice a day they are given half a pound each of a mixture made up of the following :—

2	parts of	oat meal
2	"	pea meal
2	"	ground linseed
1	"	sharps

This mixture is soaked in cold water at night and scalded in the morning. Some milk or whey is added to this food for the calves to drink, and they thrive well on it.

There are five cow-houses, each capable of accommodating fifty cows. There is a 6-ft. passage in front of the cows and a 5-ft. passage behind; earthenware troughs in front of the cows and a good manure gutter behind. Care is taken with regard to ventilation and cleanliness.

The milk contracts require that 1,200 gallons of milk should be supplied weekly, the price of which varies from 7d. in the summer to 9½d. per gallon during the winter. Any surplus milk there may be during the summer months is made into cheese, from 4 to 5 tons of cheese being made each year. No absolute record of the milk yields is kept.

For the Stock, the best foods only are purchased. Each cow is fed according to her special requirements as to the period of lactation, or whether coming on as a calver, or being fed off for the butcher.

The foods used are ground oats, maize meal, pea meal, bean meal, decorticated cotton cake, brewers' grains, cabbages, and roots. When on full rations of cabbages or roots, the quantity is regulated to each cow's requirements.

The cabbage usually lasts until about the third week in February. This year, however, the crop was used up during January, so swedes were substituted, followed by mangolds in April. A large quantity of mangolds are kept back each year for use after the first flush of grass is over.

Most of the dairy cows are bought in at first or second calf. If good milkers, they are kept four or five years, and are then fed off or sold as calvers.

In winter the cows are turned out daily for a drink of fresh spring water, while their sheds are being cleaned out and rebedded.

The dairy stock are turned out to grass from about May 12 until the middle of October. All cows are washed in November and February with McDougall's wash and hellebore: half a pound of the hellebore to 4 lb. of McDougall's wash, mixed with every 12 gallons of water. This treatment destroys the warble fly egg and lice, and pays well for doing, besides being a comfort to the animal.

At Parkside, twelve cart horses are kept; also one or two light horses for the milk trade.

From thirty to sixty pigs are fed during the summer with the residue from the cheese-making and any food left by the cows during the first flush of grass; the small unmarketable potatoes are also given, and some meal to finish them off. The pigs are all bought in as stores, none being bred.

The buildings at Parkside are good. Some have been erected by the tenant at his own expense.

The Grinsome Farm consists of 211 acres. The cropping for the year was as follows:—

27 acres	.	.	.	Potatoes
18	"	.	.	Roots
15	"	.	.	First Year's Seeds
13	"	.	.	Second " "
28	"	.	.	Oats
40	"	.	.	Meadow for mowing
70	"	.	.	Pasture, temporary and permanent

The stock consists of ninety-seven milking cows, two bulls, twenty heifers, four cart horses, and one horse for the milk trade.

The same treatment of land and stock applies on this farm as at Parkside. Here the cropping and stock-carrying capacity has been greatly increased.

The two farms are connected with the National Telephone, which provides ready inter-communication.

There are nine cottages at Parkside occupied by married men, four of whom have sons working on the farm. There are also four men boarding in the farm house, and Irish labour is employed in addition.

The head cowman is paid one guinea per week and his house, the foreman receiving 25s. per week, and overtime is allowed for extra work done. About six Irishmen are kept through the winter, because of the difficulty of obtaining workmen in the early spring.

The general standing wages for stockmen and labourers are 18s. per week, and free cottage and garden, with overtime. The cottagers are also supplied with seed potatoes for their gardens. No beer is given on the farm. Bread and cheese and tea are supplied twice daily during the potato lifting season, and during hay and corn harvests.

The potatoes are all lifted by piece-work by a gang of sixteen men, who also do the milking during summer, the price paid being 2d. per score yards up the drill. The standing wage for Irishmen (when not on piece-work) is 16s. per week, with bread, cheese, and tea allowance. The average earnings at piece-work are 5s. per day.

Wages at Grinsome Farm, 325*l.* per annum; manures, 170*l.* per annum; feeding stuffs, 825*l.* per annum, and straw, 45*l.* per annum.

Mr. Shepherd has kindly furnished the following notes on the management of his stock:—

“When possible, the cows are calved down in loose boxes and allowed to calve naturally, assistance very rarely being required. Previous to calving, the cows are fed on slop food consisting of pobbled bran and ground oats, and with light rations of cabbages, and common turnips and mangolds, each in season, but no swedes are given to cows previous to calving. Hay or straw is given twice daily. (Pobbled or slop food means scalded bran, &c., thinned down with water to milk heat for use after calving, given cold previous to calving.)

“If possible the cow is allowed to settle for at least one clear day in the box before she is expected to calve. After calving the cows are given two or three quarts of cold water and a little good hay. With this simple treatment they usually cleanse naturally, and go on with the best results, having no ill effects on the nervous system. No milk is taken from the cow other than that taken by the calf for the first day, then the udder is milked to the same level as the quarters sucked by the calf. This goes on generally for four or five days, or for as long as the calf is allowed to suck the mother. During this period the cow is given about 3 lb. of pobbled bran three times a day, together with a little good hay; after that ground oats are added to the bran, commencing with three pounds and gradually increasing to six. This continues until the tenth day, when the cow gradually comes on to her full ordinary feed. On no account is new maize meal allowed to be given to the milch cow. No case of milk fever or casting of calf bed has occurred in either herd during the last thirteen years. Simple treatment at calving time is without doubt the preventative of those serious complaints that are mostly brought about by outraging nature's laws.

“The daily ration of concentrated food for cow in full flow of milk is approximately:—

1 lb.	of	Maize Meal
3	”	Ground Oats
1½	”	Decorticated Cotton Meal
1½	”	Pea or Bean Meal
12	”	Wet Brewer's Grains,

together with about 50 lb. of cabbages, swedes, or mangolds, whichever is in season, and two fodderings of hay or straw. While at grass the cows in full flow of milk get daily:—

2 lb.	of	Maize Meal
2	”	Ground Oats
1	”	Decorticated Cotton Meal
12	”	Wet Brewer's Grains

All food left by cows when at grass is daily collected and used along with the whey from cheese-making for feeding the pigs.

"When the grass begins to go off, 4 or 5 tons of mangolds are carted on to the night pasture. The mangolds at this time are ripe and a fine food, cattle do wonderfully well upon them, and they make up for any shortage of grass that occurs during July, before the "after-grass" comes on.

"The cows are dried off for two months when possible. When quite dry, they get in winter about 6 lb. of ground oats and meal mixed per day, and in the summer about 4 lb. to assist in putting on condition ready for calving.

"No cotton cake or meal are given to cows within three months of calving as they have an effect on the calf after birth, causing it to have contracted joints, &c.

"As far as possible, all cows fed off for beef are usually drawn out between April and July, and do not go out to grass, a good trade for beef being usually met with at that season.

"Most of the cows fed off are such as have become second-rate milkers or have developed udder trouble. These are generally first season's beasts, so mostly go out leaving from 12. to 32. over cost. Useful young utility cows are bought, but fancy prices are not given to please the eye. Shorthorn bulls from known milking strains only are used for stock purposes, in preference to the beef-bred Shorthorn.

"The cows are groomed daily, Sundays excepted. The udders and teats are thoroughly rubbed and cleansed by boys before each milking to prevent dirt getting into the milk and contaminating it.

"All milk is passed through a fine wire sieve, then through several thicknesses of fine calico.

"The milk is refrigerated to 58° F., which ensures a reasonable safety for its keeping sweet. An abundant supply of water is brought by gravitation to two large refrigerators, and then passes on to a number of large troughs for the cattle to drink; a feature of the greatest importance for a healthy dairy herd and pure milk supply."

The tenant is responsible for the upkeep of drainage, fences, gates, roads, but not of the cottages. Manures and lime cost at Parkside 4002. ; straw, 1352. ; meals, &c., 2,3202. ; wages, 1,3782. per annum.

Many improvements have been effected by the tenant, including the removal of over three miles of old fences and the cleaning of those adjoining the tillage land; also the planting of over two and a half miles of new thorn fences. On the two farms over 100 acres have been drained, and 4 acres of old pitholes, &c., filled in and brought into cultivation.

The stock-carrying capacity of the farm has been very much improved, enabling it to supply the requirements of farmyard manure, thus returning back to the land a fair proportion of the produce and getting over the difficulty of procuring manure from the towns.

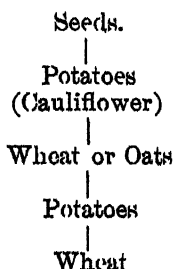
The Judges considered the general management of this farm very good, cultivations excellent, the land clean, and the crops and pastures good and well managed; the stock useful and suitable; water arrangements especially good—a valuable feature on a dairy farm; implements up to date and well looked after; buildings neat and tidy. The Judges were impressed by Mr. Shepherd's business capacity.

FIRST PRIZE FARM IN CLASS II.

Occupied by Mr. John Almond, of Buckley Hill Farm, Sefton, near Blundellsands,

Situate five miles from Liverpool Market and two from the suburbs. Held on a yearly tenancy under the Earl of Sefton, with absolute freedom of cultivation.

This farm consists of 88 acres arable and 10 acres grass. The rotation of cropping is :—



First year clover and rye-grass, which is cut for hay twice; second year early potatoes, followed by a catch crop of cauliflower in the same year; third year wheat or oats; fourth year late potatoes; fifth year wheat, which is undersown with seeds for mowing the next year. The mixture of seeds consists of per acre: 6 lb. cow-grass clover, 1 lb. of alsike, and 20 to 22 lb. Italian rye-grass. All seeds are purchased at wholesale prices, with a written guarantee of germination and purity, and are frequently tested before payment is made.

The acreages of the various crops seen were: Clover and rye-grass, for mowing twice, 17 acres; early potatoes, interplanted

with cauliflowers, 15 acres; wheat, 25 acres; late potatoes, 18 acres; oats, 11 acres; pasture, $5\frac{1}{2}$ acres, of which 3 acres were laid down by the tenant in 1900. There are 4 acres of water meadow, which form a portion of common meadow. All the tenants in the Uplands are bound to take a portion with their farms. They have formed an Association and appointed a Committee who instruct the Water Bailiff to clean out ditches, repair gates, &c., the cost of which is borne by a rate per acre. Regulations are in force as to the number of cattle per acre and the period of grazing; also for the provision against cattle suffering from skin or other disease being turned in. No manure is put on, and the hay obtained is generally worth about 20s. per ton less than clover.

All early potatoes are sprouted in boxes before planting, the method being as follows:—When the early potatoes are being lifted, all the second sized tubers (1½ in. to 2 in.) are placed in sprouting boxes, which are afterwards stocked in a roomy loft situated over the cow-byre. The natural warmth of the cow-shed below maintains in the loft above a temperature suitable for the sprouting of the potatoes and preventing damage by frost. The windows are thrown open so that light and air are freely admitted until the potatoes become green. Under these conditions each potato will, as a rule, throw up one sprout only during the winter. Mr. Almond is a firm believer in securing this first sprout, and considers it of more importance than the question of whole or cut sets. When the sprouts are about 1 in. long, the boxes are placed in cooler places to harden the sprouts until ready for planting, which usually commences about April 10, and finishes about the 24th, according to weather. The drills are made 28 in. wide, and the potatoes placed from 10 in. to 12 in. apart in the rows, according to variety, the earlier sorts being planted closer than the later ones. The manure is carted into the drills, and where sprouted potatoes are to be planted the drills are split back before planting. The method of planting in this case is by spade work. The spade is inserted into the drill, and the soil slightly raised, while the boy in attendance places the set in position, the withdrawal of the spade causing the earth to cover the potato. One man and a boy can plant three quarters of an acre per diem.

The varieties grown at present are:—Kidneys, May Queen, Ninetyfolds, Epicures, and Eclipse. The yields vary from 6 or 7 tons late in June or early in July, to 10 or 12 tons three or four weeks later.

The sprouting boxes which are emptied first are immediately refilled with late varieties for late planting, and replaced in the loft.

In this instance light and draught are carefully excluded, in order that growth of the sprouts may be accelerated. The sprouts are slightly hardened by exposure to light before planting.

Late potatoes are all Scotch seed, and except the few referred to are grown from large cut sets planted without sprouts in drills 28 in. wide and about 18 in. apart in the rows. The potato crop is sprayed twice with a mixture of copper sulphate and soda, once in June and again in July, the mixture consisting of 12 lb. of washing soda and 10 lb. of sulphate of copper to every 40 gallons of water. Sixty gallons of the mixture is sufficient for spraying an acre once, the cost being about 6s. per acre each dressing for materials, labour, and depreciation of implements. A heavier and sounder crop has undoubtedly resulted from spraying. The early potatoes are lifted by piece-work by Irish labourers at a cost of about 35s. per statute acre. Late potatoes are taken out by a digger, and men and boys are employed to pick them up at 3s. 6d. per day for the men and 1s. 9d. for boys. Rather more than three acres per day are cleared in this way, and, in Mr. Almond's opinion, besides being much better for the land it is also better for the potatoes. The cost comes out at about 15s. per acre less than piece-work. The work is done quicker, and consequently less risk of frost incurred.

Notes on the Catch Crop of Cauliflowers.—The plants are reared in seed beds in the field in which they are to be grown. Half a pound of Veitch's Autumn Giant cauliflower seed is allowed for each acre that is to be planted. The seed beds are distributed about the field, so that the plants will be at hand when required. It is important for the health and vigour of the young plants that they should not be crowded in the seed bed, so as to ensure a good "butt" (seed bed) of plants. One pound of seed is allowed to each 200 square yards. The seed is sown in the butts at three different periods, viz., during the first, second, and third weeks in April, the object of the three sowings being to guard against total loss by frost. The young cauliflowers are ready for transplanting usually from the first to the second week in June. It is essential that all planting should be finished before Midsummer Day.

Just before planting-out time, the drills of early potatoes, between which the cauliflowers are to be planted, are earthed up and cobbled in between the drills with an implement called a clobber, which makes little heaps of soil about 24 in. apart up the drills in which the cauliflower plants are placed. When the potatoes are cleared off, the cauliflowers are earthed up and treated as a separate crop, receiving one application of nitrate

of soda in July and another in August, totalling to $2\frac{1}{2}$ cwt. per acre. The first application of nitrate of soda is applied direct to the plants, whether the potatoes are cleared off the ground or not. The second is sown after the cauliflowers have been horse hoed, and is ploughed up to the plants by the ridging plough. It should be noted that great care is taken in applying the nitrate of soda for the first time, to avoid any actual contact between the fertiliser and the young plant. Experience shows that the most desirable distance is from $\frac{1}{4}$ in. to 6 in. from the stems of the plants.

When grown, some of the cauliflowers are sold as vegetables, if prices are favourable, either to local greengrocers or at Liverpool Market, but the hearts of the bulk of the crop are put into casks and brined, and the leaves sold to local dairymen. A certain quantity of brined cauliflowers are contracted for every year, and, should vegetable prices rule low, more are brined and disposed of later in the season.

This system has here been carried out for five years, the area planted varying from 13 to 15 acres per annum. Mr. Almond has at his own expense erected a shed 35 yards long and 8 yards wide, with a good cement floor and efficient water supply and drainage, and has purchased several hundred barrels to deal successfully with the brining business. The cauliflower crop is largely responsible for the heavy labour bill, but realises a good sum per acre, and shows a satisfactory return on the capital outlay. It is interesting to note that before Mr. Almond started the brining of cauliflowers, he had occasionally to accept very low prices in plentiful seasons in the vegetable market. For example, one load of good cauliflowers, on October 1st, 1900, realised only 2d. per dozen, or 17s. 8d. for a two-horse load.

The quantity of cow manure incorporated in the soil is usually sufficient to grow a good crop of clover-hay without this crop being especially manured. The system followed ensures two good dressings in the five years' course, and it is only to weak places that a little horse manure is sometimes applied to the clover crop. An average yield for the two cuts in one year is from 3 to $3\frac{1}{2}$ tons per acre, according to season. The pasture land receives a top-dressing of 10 tons of horse manure every third or fourth year.

For early potatoes and cauliflowers, about 27 tons per acre of mixed cow and farmyard manure are applied. For late potatoes, about 20 tons per acre. Potatoes usually represent about two-fifths of the cropping of the farm.

Corn crops rarely receive any manure, as they follow green crops, which have been well done. Wheat usually averages from $5\frac{1}{2}$ to $6\frac{1}{2}$ quarters per acre; oats, 7 to 9 quarters per acre,

according to season. Labour amounts to 415*l.* per annum, to which should be added about 55*l.* per annum expended on various forms of labour connected with the brining industry, quite apart from the cost of cauliflower cultivation, &c.

Manures amount to 170*l.*, feeding stuffs to about 200*l.* The only artificial manure used is the nitrate of soda for cauliflowers. Cow manure is purchased from local dairymen, and mixed with farmyard manure. The quantity purchased during 1909 was 705 tons, and about 150 tons of farmyard manure was made on the premises. Cow manure costs from 5*s.* to 5*s.* 3*d.* per ton, horse manure 3*s.* per ton. The bulk of the manure is brought to the farm when making return journeys from the taking of produce into Liverpool and its suburbs. Should special journeys be necessary, one man, with waggon and team of two horses, can haul to the farm about seven tons of manure per diem.

Five working horses and two colts are kept, one rising three and the other rising two years old. All the working horses have been purchased as colts and worked on the farm. The two colts have been bred by the tenant from a registered mare, sired by a pedigree horse.

Each team of two horses, when in work, is allowed two bushels of split maize and two bushels of crushed oats per week, mixed with chaffed hay or wheat chaff, moistened with a solution of treacle and water. Hay is given *ad lib.* Colts are given roots and chaff, with hay. Some of the horses are turned out in summer, and only three kept working.

The horses were a very good lot indeed, and very well looked after, and have been successful in the local showyards. That they are well suited for their work was clearly demonstrated to the Judges on their first visit, when they had the pleasure of seeing a team of two abreast drawing a furrow 12 in. deep in a strong loamy soil. The furrow here was about 100 yards long, and so straight and cleanly cut that the Judges were not at all surprised to hear that the ploughman had won many prizes, and they heartily complimented him on his work.

Cattle, in the winter, are given roots and fattening meals, with plenty of good hay. Fifteen head of cattle, consisting of four dairy cows, two in-calf heifers, two fat heifers, two bullocks, five calves, and four pigs. Ten were bred by the tenant, the rest were purchased either as calves or young cows. Calves are allowed new milk until one month old, afterwards skim milk and calf food are given. Milking cows, in summer, get a small quantity of good compound meal morning and evening. Other cattle, in summer, are out at grass.

Dairy.—This department is entirely in the hands of Mrs. Almond, and is conducted in a thoroughly capable manner.

Detailed records are kept, and a scrupulous cleanliness observed which called for special commendation by the Judges.

Three or four young cows are kept, and sold off at third or fourth calf to dairymen. Surplus milk at the week end is sold at the door at 1s. per gallon. During the week the cream is churned and the butter sold at 1s. 3d. to 1s. 4d. per lb., the skim milk going to the calves.

About sixty or seventy head of poultry are kept and usually some eighty or a hundred chickens reared every year. All the cockerels are sold off at from 8d. to 9d. per lb. live weight. Eggs are collected daily, the annual average for the last three years being 6,800. Some are sold privately at retail prices, others are taken regularly every week by a dairyman at local market prices. Old hens are sold off in August every year.

The receipts from the smaller sources of income amount to about 120*l.* per annum.

Fruit from a small orchard is sold retail at the door, and in larger quantities to greengrocers. Fifty-four young dwarf apple trees were planted last year.

The tenant is not responsible for the upkeep of buildings, cottages, or gates. The landlord supplies gates and posts, but the tenant fixes them and paints them with paint supplied by the landlord. The tenant is responsible for the upkeep of the accommodation roads, and is jointly responsible with the landlord for the drainage, the landlord supplying tiles and the tenant the labour. The tenant is responsible for the trimming and cleaning of the fences, which are very well done, the landlord supplying the necessary quicks. Tenant's responsibilities are well carried out.

The general management is good; cultivations good; land clean; the stock good and suitable; hedges well done; whole farm is neat and tidy; accounts are well and carefully kept; horses very good and well looked after; poultry management very good; up to date in method and well abreast of the times.

The Judges complimented Mr. Almond on his enterprise in the cauliflower industry.

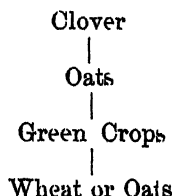
FIRST PRIZE FARM IN CLASS III.

*Occupied by Mr. Thomas C. Goodwin, of Henhull Hall,
Nantwich.*

This farm is held on a yearly tenancy under H. J. Tollemache, Esq., of Dorfold Hall, and consists of 209 acres, made up of 64 acres of arable and 145 acres of pasture and old mowing land.

It is a strong soil, with clay subsoil, and is essentially a dairy farm and well adapted for the milk-selling business now in operation.

The arable land is generally worked on a four-course system, viz. :—



and clover again. The clover ley is left down for two years, being mown four times, unless it is not good in the root, in which case it is ploughed up after the first year.

At the time of our visit there were 6 acres wheat, 20 acres oats, 21 acres clover, 5 acres mangold, 2 acres cabbage, 8 acres swedes, 2 acres potatoes, 22 acres meadow land for mowing, and the rest permanent pasture. Twelve acres of first year clover were very good; this received about 20 tons per acre of farmyard manure in the spring-time. The seed mixture consists of per acre: 1 bushel Italian rye-grass, 8 lb. of English red clover, 4 lb. of alsike, and 2 lb. of white clover. The "Seed" crop was especially good.

Farmyard manure is generally used on the clovers, but occasionally the first year's ley is dressed with either boiled ground bones or superphosphate.

The land intended for green crops is dressed with 4 cwt. kainit in February, afterwards receiving: *Cabbages*—farmyard manure, twenty to twenty-five loads, and 4 cwt. of artificial manure. *Swedes*—fifteen loads farmyard manure and 5 to 7 cwt. of turnip manure on ridges 20 or 21 in. apart. *Mangolds*—twenty-five loads farmyard and 8 cwt. mangold manure, afterwards top-dressed with nitrate of soda. Webb's New Lion is the variety generally grown, the seed being sown at the rate of 10 lb. per acre on ridges 19 in. apart, and singled out not more than 6 in. in the rows. *Potatoes*—about 25 tons per acre of farmyard manure, the land having been previously dressed with 4 cwt. of kainit.

The meadow land intended for mowing receives a dressing of farmyard manure every other year, superphosphate being used the alternate year. The pasture land is dressed with boiled bones or superphosphate every third or fourth year.

The cattle consist of 100 cows or heifers in-milk or in-calf, eighteen yearling heifers, two stock bulls, and thirteen rearing calves. As this is a milk-selling farm, great attention has to

be paid to the milking cows in feeding and also in regulating the calving times as much as possible, in order to keep up the required quantity of milk, viz., an average of 200 gallons per day from October 1 to April 1 and 250 gallons per day during the ensuing six months.

The milking cows are kept indoors most of the time from November to April, going to water twice a day, and are fed as follows during that time:—5.15 a.m., long hay (previous to milking, which takes place at 5.30 a.m.); 6.45 a.m. fed with corn, from 6 to 10 lb. each according to the milk given. The corn consists of cotton cake or meal, maize meal, thirds, and ground oats. This mixture is evenly balanced, so that the cows can take a good quantity without being upset, and also with a view to producing the largest quantity of milk, keeping the cow in healthy condition. At 8 a.m. they receive 35 to 45 lb. of swedes each, as in the case of corn, according to the milk given and the appetite of each individual cow, which must be studied; when mangolds are used instead of swedes, about 30 to 35 lb. each feed. At 8.30 to 10 o'clock, and again at 1 o'clock cows are turned to water and fed with long hay. At 2.30 p.m. feeding commences again: corn, same quantity as in the morning, afterwards going to water, and fed again with roots, same quantity as morning. The afternoon milking takes place at 4.45 p.m., and the cows are given long hay to finish up at 6 p.m. By this system of feeding, Mr. Goodwin says he has no difficulty in getting cows to give from 5 to 6 gallons of milk per head in the winter time.

In summer the cows are fed until early in June, and from that date no corn is given until September again, unless there is a shortage of grass.

The young stock are kept in the yards at night through the winter, and turned out in daytime, being fed with roots, ground oats, Bibby cake, and long oat straw in the racks. About fifteen heifer calves are reared each year, to come into the stock at two and a half years old. These are taken off whole milk at fourteen or twenty-one days old, and then given skim milk with a little of Bibby's cream equivalent and oil cake and ground oats to eat dry, and a little sweet hay in the racks.

About twenty cows are purchased at second or third calf each year, to keep up the milk supply at times when it would otherwise fall low. Only the turn-off cows and those who do not give sufficient milk are fattened for the butcher. The stock generally is worked round as long as satisfaction is given. The milk yields of Mr. Goodwin's cows for three years previous to 1910 may be of interest:—

	£	s.	d.
In 1907 the average value in milk returned from 75 cows was .	27	0	0
In 1908 the average value in milk returned from 85 cows was	26	14	0
In 1909 the average value in milk returned from 95 cows was	26	1	4

All the milk goes to Liverpool and is sent in the best condition possible, being passed through three different sieves and then cooled down to a very low temperature by the use of an ample water supply scheme, carried out by Mr. Goodwin himself (with the assistance in the way of pipes from the landlord) some eight years ago. The water flows by gravitation, and runs through the refrigerator at the rate of 17 gallons per minute, besides being used for many other purposes on the farm.

About thirty or forty sheep are kept, and are generally Kerry Hill ewes, on which a Border Leicester ram is used. The lambs are sold fat in good time.

The sheep were a very nice looking lot, the lambs being particularly good.

Five cart horses are kept, and one nag horse for milk running, also one cob for driving. The cart horses are bought in at three or four years old, and sold out for town work at five or six years. The horses were very good.

Labour amounts to 450% ; purchased manure, 120% ; purchased foods, 950% to 1,000%, besides a large quantity of the home-grown corn being used.

Two youths are boarded in the house, and seven weekly men are employed, the dairy work being done by one of the men.

The tenant is not responsible for the upkeep of buildings, as far as bricks and mortar are concerned, but repairs and makes new doors, gates, &c., the landlord finding material.

Most of the land has been drained some years ago, but a good portion now requires further attention. Mr. Goodwin has re-drained a quantity, and also spent a lot of labour on some of the land drains that are now working as desired. About 1,000 yards of old fences have been stocked up, ditches piped and replanted with young quicks, entirely at the tenant's own expense.

There are no cottages on the farm.

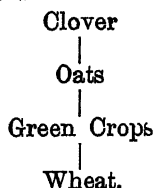
The stock on this farm were all very good, both in quality and condition ; the cultivations and crops good, and the general management excellent. Many improvements have been effected by the tenant, including the splendid water supply and milk-cooling apparatus, and planting of young fences. The dairy herd are highly fed, and give a good return. All buildings in a very neat and tidy condition, and all tenant's responsibilities well attended to. Many evidences of close, personal attention and business-like method.

FIRST PRIZE FARM IN CLASS IV.

*Occupied by the Executors of the late John Blackshaw, of
Blue Coat Farm, Hatton, Warrington,*

Consists of 58 acres arable and 74 acres grass, held on a yearly tenancy under Sir Gilbert Greenall, Bart.

The ordinary four-years' rotation of cropping pursued is :—



The acreages under the various crops were :—

Mowing Grass	27 acres
Oats	36 "
Green Crop	16 "
Wheat	6 "
Pasture	47 "

Owing to the wet season in 1909, the ordinary acreage of wheat was not sown.

The green crops are manured with 20 tons of farmyard manure, 5 cwt. of superphosphate, and 2 cwt. of sulphate of ammonia per acre. Buxton lump lime is also used and worked in with the potato crop. Early potatoes are grown and sent to Manchester Market, where they realise good prices.

The potato lifting is done at 1½*d.* per score yards up the drill.

There are thirty-six dairy cows and heifers and ten calves.

The cows are fed upon flat maize, Bilby meal, and brewers' grains. All heifers that yield less than 12 quarts of milk per day for the first three months after calving are fed off for the butcher. Cows are expected to yield from 16 to 18 quarts per diem for the first three months after calving or are not again put to the bull. Pigs of the Large Black breed are kept, and made up to twelve score at six months.

Labour comes to 200*l.*; manures, 30*l.*; food stuffs, 200*l.* per annum.

The tenant is responsible for the upkeep of drainage and fences, but not for buildings or gates.

The backbone of the farming here is sound horses and good milking cows; the principal sources of income being from horses (which are sold at four or five years old for town and corporation work), milk, corn, and potatoes.

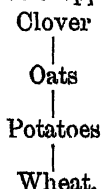
The farm is well and carefully managed by Mrs. Blackshaw's sons, who are evidently very industrious, and it gave the Judges great pleasure to award them first prize in this class.

SECOND PRIZE FARM IN CLASS I.

Occupied by Mr. W. H. Carter, of Moss Hall, Carrington, Manchester.

This farm is rented from the Manchester Corporation under yearly tenancy, and consists of 320 acres arable and 20 acres grass. The produce is all sold off, with the exception of such as is required for the farm, and is conveyed by road to Manchester, and to more distant towns by rail, to which the farm has a private siding.

The four-course system of cropping is followed :—



Occasionally a crop of potatoes is taken after the clover instead of oats. The acreages of the different crops in 1910 were : Wheat, 72 acres ; potatoes, 88 acres ; oats, 72 acres ; clover, 88 acres ; mangold, 1 acre ; grazing land, 25 acres.

The mixture for one year's ley is as follows : 10 lb. of clover and 16 lb. of grasses (made up of 3 lb. of broad red English clover, 3 lb. of Canadian, 3 lb. of Chilian cow-grass, 1 lb. of giant white clover, 7 lb. of Italian rye-grass, 7 lb. of perennial rye-grass, and 2 lb. of timothy). These seeds are mown for hay twice in the one season, after which they are ploughed up and the land sown with oats, and so follow on with the rotation of cropping. The seeds were very good.

Thirty acres of clover were dressed with 12 tons of manure to the acre, and 58 acres with 3 cwt. of superphosphate early in March, followed in April with 3 cwt. of concentrated manure, $\frac{1}{2}$ cwt. of sulphate of potash, and $\frac{1}{2}$ cwt. of sulphate of ammonia, these three being mixed together. The last-mentioned dressing costs about 25s. per acre, and in an average season will yield a cut of 3 tons of clover hay per acre all round.

The varieties of oats sown are Garton's Improved Abundance and the Yelder. This latter variety will (in Mr. Carter's opinion) take the place of Abundance, as it stands better and yields extremely well.

Eleven acres of Garton's Improved Abundance oats after two years' ley, top-dressed in March with $\frac{1}{2}$ cwt. of sulphate of ammonia, $\frac{1}{2}$ cwt. of sulphate of potash, 2 cwt. of superphosphate, and 2 cwt. of concentrated manure, were excellent, and quite the best seen by the Judges.

It must be remarked, however, that Mr. Carter does not often have two years' ley land, as he does not believe in it.

Of 30 acres of Improved Abundance and Yields oats after wheat seen by the Judges, 25 were fair and 5 badly attacked by leather jacket; 31 acres of Improved Abundance were clean and good; 17 acres first year's seeds were patchy owing to previous corn crop being laid, and 57 were good; 16 acres of seeds after wheat looked excellent; and of the 72 acres of wheat, 52 very good, and 20 only moderate.

The 88 acres of potatoes were all very clean and well managed, and had every appearance of doing well.

Part of the potatoes receive 40 tons of night soil in the autumn, which is ploughed in, the remaining land has applied to it 15 tons of farmyard manure in the drills in the spring, with a mixture of 1 cwt. of sulphate of ammonia, 1 cwt. of sulphate of potash, 2 cwt. of concentrated manure, and 2 cwt. of superphosphate.

About 60 acres are planted yearly with new Scotch seed, obtained from the districts of Dundee, Montrose, and Laurencekirk. The varieties planted are Ninetyfolds, Pioneers, King Edwards, Dalhousies, and Mayfield Blossom. The last two named grow a fine sample and command a good price for the "chip" trade and domestic purposes. These are all sprouted in boxes before planting, a method which is said by Mr. Carter to increase the yield 2 or 3 tons per acre. All land is manured where possible during the autumn and ploughed in, thus relieving the work when planting time comes in the spring. At this time the land is cultivated and worked in the following manner:—

Two teams are placed ahead working and harrowing the land, another working a "Wallace" drill, which opens out two drills at a time and sows artificial manure at the same operation, a fourth team and two men carting out seed potatoes, ten men planting sprouted potatoes out of boxes, two men covering up behind with drill ploughs with the teams. With this organisation 6 acres per day are covered. This continues from day to day in favourable weather.

About 60 acres were dressed with 40 tons of night soil sweepings and lairage manure, delivered on the farm by the Manchester Corporation, by a light railway movable over the field, at a cost of 1s. 9d. per ton, and at the time of planting the following mixture was applied to the potato drills per acre:— 3 cwt. of superphosphate, 2 cwt. of concentrated manure, and 1 cwt. of potash. The remaining potato land received 15 tons per acre of stable manure from the farm, 1 cwt. of sulphate of ammonia, and the mixture above mentioned.

The varieties of wheat sown are Carter's Standup White and Garton's New Victory.

Wheats yield very well on this land, averaging eleven bags of 280 lb. per acre for the whole area sown.

Pasture land received 5 cwt. of superphosphate and concentrated manure mixed to the acre.

Twelve working Shire horses are kept, these including five registered Shire mares by Tatton Friar, Codnor Harold, and Hendre Champion. Three of these mares were in-foal to Dray King and two to Lymm Colin.

Bred on the farm there are four Shire fillies by Dray King and Tatton Friar. Two Dray King foals were sold in December, a filly foal making 175*l.* and a colt foal (which had met with an accident) going for 50*l.*

Two nag horses and one cob are also kept. The daily ration for horses at work consists of : 10 lb. of crushed oats, 3 lb. of split beans, 5 lb. of broad bran, and 14 lb. of chaffed clover hay. This costs about 10*s.* 6*d.* per head per week. All horses have a run out at grass after the spring work is finished. About half of the horses are turned out to grass for six weeks' run, and are then brought in to carry on the work of the farm while the others are turned out for their run. The experience is that this benefits the horses much more than turning them all out and bringing them in from grass at the same time to carry on the work of the farm.

The pigs consisted of seven pure bred sows, and thirty feeding and store pigs.

Three Jersey cows are kept to supply the house and workmen with milk.

Team men receive 1*l.* per week with cottage and garden ; ordinary workmen have 18*s.* per week with cottage and garden. In hay and corn harvest all overtime is paid for at the same rate per day.

The hours of duty are from seven to twelve and one to six, with the exception of Saturday, when the men finish at five o'clock.

Prizes are awarded on the amount of work done, neatness and workmanship being taken into consideration ; points for care, management, and grooming of horses, and for cleanliness of all gears ; points for care and attention with all tools, implements, and machinery, and for placing such implements, &c., in their respective places when finished with ; for punctuality, civility, and general attention to all duties. The prizes awarded vary from 1*l.* to 3*l.*

The wages account runs to slightly over 1,000*l.* per annum ; manures, 386*l.* ; purchased foods, 420*l.* ; seeds account, 500*l.*

The only piece-work here is potato lifting, which is paid for at the rate of 1½*d.* per score yards up the drill.

The tenant is responsible for the upkeep of all windows

and internal fittings in buildings, for the main drains and watercourses, for maintenance of the fences and gates, but not for renewals in the case of the last named. He is responsible for the upkeep of all inside fittings, &c., in the cottages, and jointly responsible with the landlords for the upkeep of the roads, which, on this farm, form a very considerable item.

Mr. Carter keeps a complete set of books, which go into the hands of a prominent firm of chartered accountants in Manchester to be audited at the year end, and from these many interesting details, showing the thorough business capacity of this competitor, were gleaned.

When making his yearly valuation, Mr. Carter allows for a very full depreciation of all standing stock, notwithstanding the fact that he keeps all implements and machinery absolutely up to date.

Valuations for ploughing land for corn are put at 10s. per acre, for potatoes 12s. 6d. Wheat sown is valued at cost of seed, plus ploughing and sowing. Clover seeds are valued at cost of seed and sowing; manures as per invoice price, with such extras as labour and carting where applied for the next season's crop.

Produce on hand valued at 10s. per ton less than market price to allow for cartage, &c., to town. Unexhausted residual manurial value is not taken into account, as the expenditure on manures is about the same each year, and Mr. Carter expects to pay the manure bill out of profits from time to time, as he follows the same system of manuring and cropping all over the farm each four years, with the possible exception of the grass land, which is kept down for grazing. The farm is well equipped with up-to-date implements, which are well looked after. In many ways it is exceptional and is very well laid out; it has excellent roadways to each field and a light railway running alongside the roadways communicating from field to field with the main railway sidings. No stock is kept, and practically all the produce is sold off.

Manure is purchased from the Manchester Corporation and comes down the light railways to the fields, and thus the fertility is kept up.

The Carrington Moss Land is of a character which requires careful and special treatment, both of which it receives at the hands of the present tenant, who is, however, greatly assisted in his management by the facilities afforded by the light railway, and by his agreements with the Manchester Corporation. The house and buildings, with seven cottages, are excellent, and kept in perfect order by the tenant. The Manchester Corporation are to be congratulated upon their

enterprise in reclaiming such land to such good purpose ; they are further to be congratulated upon having such a thoroughly good tenant as Mr. Carter, who, in the opinion of the Judges, makes the most of the opportunities presented, while at the same time carefully safeguarding the interests of his landlords.

SECOND PRIZE FARM IN CLASS II.

Occupied by Mr. S. T. Rosbotham, of Stanley Farm, Bickerstaffe, Ormskirk.

This farm consists of 143 acres of arable land held on a yearly tenancy under the Earl of Derby, and is worked on the following system :—

Potatoes
|
Wheat
|
Oats
|
Seeds.

The seeds are down for one year only.

The seeds mixture consists of :—

4½ lb. Red Clover
2½ „ Cow Grass Clover
2½ „ Alsike Clover
1 „ Rib Grass
1 „ Timothy
1 „ Cocksfoot
1 bushel Italian Rye Grass
† „ Perennial Rye Grass

The acres under the various crops were : Potatoes, 40 ; wheat, 12 ; oats, 34 ; seeds, 18, and pasture, 10.

The potato crop is manured with 20 tons per acre of farm-yard manure, along with 3 cwt. of sulphate of ammonia, 3 cwt. of potash, and 3 cwt. of superphosphate. Of the 41 acres grown, 36 consisted of the “Up-to-Date” variety and 5 of “Presidents.” Mr. Rosbotham makes a great feature of his potato crop, and purchases new seed from Scotland each year.

There were 42 acres of wheat, 33 of which were after green crop and 9 after oats, the latter being a second white crop. The wheat and oat stubble was dressed with sawdust manure at the rate of 15 tons per acre before ploughing. This manure is purchased at 5s. per ton. Mr. Rosbotham much prefers the sawdust manure for dressing corn, and shippon manure, mixed with horse manure, for the potato crop. No mangolds or turnips are grown, the waste potatoes supplying the necessary roots for the small head of stock which is kept at this farm.

The grass land is top-dressed with 15 tons per acre of sawdust manure, and looked very well indeed.

The cattle consisted of five cows, eleven heifers, and one heifer calf, all bred upon the farm, but occasionally young calves are purchased for rearing. There were also ten excellent pigs. The stock are fed on purchased meals, bran, chaffed hay or wheat chaff, and foddered with hay and the waste potatoes.

Manures cost 300*l.* per annum, and the labour amounts to 375*l.*

The principal sources of income are potatoes, corn, and straw. Straw sells at over 2*l.* per ton, and is more than replaced by purchased manure.

This farm is typical of many in the county, 'practically all the manure is purchased and delivered on to the farm direct from a local railway siding. A large quantity is purchased every year, and there is no question as to the condition of Mr. Rosbotham's fields.

The land is well managed, and is in good heart and very clean. The hedges and fences are good and well kept.

The competition in this class was very good indeed, and the Judges considered Mr. Rosbotham's farm a good second.

SECOND PRIZE FARM IN CLASS III.

Occupied by Mr. S. S. Raingill, of The Grange, Ringway, Altrincham.

There are 90 acres of arable land and 85 acres of grass, held under a yearly tenancy from Lord Egerton of Tatton. The tenant is not responsible for the upkeep of the buildings, drainage, or cottages. He is responsible for the fences, gates, and occupation roads.

The system of cropping is oats, followed by green crop, which comes into wheat, which in its turn is undersown with seeds. Occasionally a second white crop is taken, in which case it receives a top-dressing of superphosphate or other manure.

The areas under the various crops were :—

Oats	11 acres.
Green crops	17 "
Wheat	17 "
Clover	16 "
Second year's clover	11 "
Third year's clover	11 "
Old meadow for mowing	50 "
Pasture	35 "

The seeds for mowing receive 6 cwt. of basic slag per acre in the autumn, and 5 cwt. per acre of bone compound in the spring.

Meadow land for mowing is top-dressed with 10 tons per acre of farmyard manure. The pastures have 7 cwt. per acre of basic slag in the autumn or 6 cwt. per acre of superphosphate, and in the spring 1 cwt. of sulphate of ammonia. Green crops have 10 tons per acre of farmyard manure, which is applied in the autumn, and a further 10 tons of the same manure in the spring, with the addition of 5 cwt. per acre of a manure specially prepared for the particular crop to be grown.

Ten acres of three years' seeds which had received in the autumn of the second year 6 cwt. per acre of basic slag, and in the spring of the following year 6 cwt. per acre of Manchester Corporation concentrated manure; also 25 acres of mowing grass which are mown each year, the aftermath being grazed and the land subsequently dressed with 12 tons per acre of farmyard manure in the autumn, and 15 acres of first year's seeds after oats, cut twice for hay, having been top-dressed for the second crop with 6 cwt. per acre of Manchester Corporation concentrated manure in July: were all very good.

The stock consisted of one pedigree Shorthorn bull, one non-pedigree Shorthorn bull, two pedigree Shorthorn cows, thirty-eight non-pedigree dairy cows, ten dairy heifers, fourteen stirks, two young bulls, and twelve calves. Of these, ten cows and one bull have been purchased, the others being bred on the farm.

The horses were one Shire stallion, one two-year-old Shire stallion, seven Shire mares, one three-year-old gelding, one two-year-old gelding, two two-year-old Shire fillies, two yearling Shires, four Shire foals, three Hackney mares, one hack, two two-year-old Hackney colts, two milk horses, and one pedigree pony.

Of these one stallion, three Shire mares, and three Hackney mares were purchased.

The milk from the dairy cattle is retailed at 3½d. per quart, about 80 gallons daily being disposed of.

Cows in milk receive about 6 lb. of bran, 4 lb. of ground oats, 4 lb. of dairy meal, 15 lb. of brewers' grains, ½ cwt. of swedes, and chaff daily; also hay three times a day. Young stock are given oat straw, hay, and swedes during the winter, with 5 lb. per head of ground oats and beans to in-calf heifers.

The cows were a very good lot indeed, as also were the horses.

Mr. Raingill has been particularly successful in the show ring, and has a considerable income directly and indirectly from this source.

From thirty to forty newly dropped calves are sold annually at an average price of 5*l.* per head.

The chief sources of income on this farm are corn, hay, cattle, milk, horses, and stud fees.

Mr. Raingill is a great believer in an implement called the drill harrow, a wooden implement with spikes on the underside, which while having the effect of disturbing the ground, does not expose it too much to the sun.

The labour bill amounts to 500*l.*; purchased foods to 700*l.*, and manures to 103*l.* per annum.

SECOND PRIZE FARM IN CLASS IV.

Occupied by Mr. Thomas Croskell, of Bank House Farm, Glasson Dock, near Lancaster.

Consists of 30 acres arable and 66 acres grass, held on a yearly tenancy from Mr. Robert Clark.

A four-course system of rotation is followed:—

Seeds
|
Oats
|
Green Crops
|

Wheat or Barley undersown with "Seeds."

There are 9 acres of oats (some of which is after rape fed on by sheep), 2 of wheat, 4 of barley, 2 of potatoes ("Scotch Up-to-Date" and "Triumph" varieties), $\frac{1}{2}$ acre of mangold, and 2 acres of turnips.

Five and a half acres of first year clover land for hay is dressed with farmyard manure.

The seed mixture consists of 7 $\frac{1}{2}$ lb. of red clover, 4 lb. of cow-grass, 4 lb. of alsike, and 1 $\frac{1}{2}$ bushels of Italian rye-grass.

About 15 tons of farmyard manure is given to the root crop, which is top-dressed with nitrate of soda.

The potatoes are manured with 20 tons of farmyard manure and 1 cwt. of nitrate of soda per acre.

The permanent pasture receives 5 cwt. per acre of dissolved bones and 2 cwt. of superphosphate from time to time in the autumn.

The stock consists of twenty cows in-milk and in-calf, six three-year-old heifers, six two-year-old heifers, and seventeen calves. All the cattle on the farm have been bred by the tenant, with the exception of two cows.

For the first five weeks the calves receive whole milk, afterwards they have whey with ground wheat. Four young bulls are reared each year.

The sheep consist of twenty ewes, ten hoggets, and thirty-one lambs.

Nearly all the produce of the farm is consumed on the homestead, and, in addition, there is an annual expenditure of 250*l.* on purchased foods.

The main sources of income are from cheese, cattle, horses, and potatoes.

Cheese-making continues all the year round, the average being six cheeses per week, each of 46 lb. The whey goes to the pigs.

Mr. Croskell has the credit of the smallest farm and the best stock that came under the notice of the Judges, and the distinction of having the lowest wages bill proportionate to the holding, the work of the farm being carried on by Mr. Croskell, his two sons and daughter, each taking their department, with casual help from one man labourer.

The home-bred stock on this farm are particularly good, and many of them are sold to very widely distributed areas.

GENERAL REMARKS.

The stock of the two counties generally is good, particularly in Lancashire, where the horses and cows are especially good. The Cheshire dairy stock is rather disappointing, and is capable of great improvement. The sheep are not a strong feature in either of the two counties, and, so far as the Judge's tour is concerned, consisted mainly of "flying flocks," which are only a short time on the farm. The pigs seen were good, and poultry were a feature on many of the farms, and were well and properly managed.

The management of temporary grass land is generally good, due, no doubt, to the ready sale for hay. Fences and gates good, and well looked after. Here the great benefits of freedom of cropping are seen, whereby a tenant can grow just such produce as he can best sell, and at such time as best suits himself. The fertility of the soil is highly maintained by the liberal use of manure, and, indeed, it is probably due more to liberal manuring than to the natural capabilities of the soil that large crops are grown. It is interesting to note that, although nearly all the farms are held under yearly tenancies, they generally pass on from father to son.

Where stock are kept, they are well done, feeding stuffs being readily and comparatively cheaply obtained from the ports of the two counties. Hence it is not surprising to find a system of high farming.

Most of the farms are well supplied with very good implements and with excellent Dutch barns, in some cases of huge dimensions, to protect their produce. The houses and buildings are, as a rule, very good.

Acreage under Crops and Grass and Number of Live Stock in the Counties of Lancaster and Chester in the Years 1910 and 1877.

	1910.		1877	
	Lancaster	Chester	Lancaster	Chester
Total Area (excluding water).	Acres 1,183,048	Acres 647,816	Acres —	Acres —
Total Acreage under Crops and Grass ¹	795,216	533,329	766,595	529,381
Arable Land	237,575	193,351	226,420	174,365
Permanent Grass	557,641	339,978	540,175	355,016
Wheat	19,757	14,951	23,984	25,806
Barley	4,427	1,162	9,089	3,322
Oats	85,786	65,641	55,354	47,409
Rye	1,029	2,122	1,091	1,598
Beans	589	189	4,702	2,379
Peas	722	228	420	288
Potatoes	42,604	20,778	33,783	20,380
Turnips and Swedes	8,208	10,437	11,327	8,599
Mangold	1,951	5,170	1,653	2,067
Cabbage	2,813	1,245		
Kohl-Rabi	17	22	1,421	511
Rape	121	9		
Vetches or Fares	626	173		
Lucerne	24	7	2,513	1,240
Other Crops	2,560	1,602		
Small Fruit	1,222	1,200		
Clover, Sainfoin, and Grasses under Rotation	65,789	63,143	72,863	58,443
Bare Fallow	1,330	267	3,220	2,043
Mountain and Heath Land used for Grazing	104,846	13,047	—	—
Horses used for Agricultural purposes	No 34,455*	No. 20,707*	No 23,271	No. 14,129
Unbroken { One year and above	6,896	4,681	13,527*	8,081*
Horses { Under one year	2,755	1,814		
TOTAL OF HORSES	44,106	27,209	36,798	22,203
Cows and { In milk	117,940	104,094	123,299	95,053
Heifers { In calf but not in milk	18,812	11,916		
Other Cattle:—Two years and above	22,677	10,896		
" " One year and under two	32,374	28,666	74,958	46,713
" " Under one year	35,113	28,510		
TOTAL OF CATTLE	227,416	184,312	228,945	155,969
Ewes kept for Breeding	128,203	35,819	202,103	68,532*
Other Sheep:—One year and above	54,437	21,518		
" " Under one year	141,844	42,524		
TOTAL OF SHEEP	324,484	99,861	328,237	113,242
Sows kept for breeding	7,581	7,573	—	—
Other Pigs	62,371	64,901	—	—
TOTAL OF PIGS	69,952	72,474	44,456	68,152

¹ Not including Mountain and Heath Land.

² Returns of Mountain and Heath Land were not collected in 1877.

³ Including Mares kept for breeding.

⁴ Not separately distinguished in 1877.

Owing to the proximity of so many large towns and the facilities for transport, farming in the counties of Lancaster and Chester is carried on under great advantages. High prices are obtained for hay, straw, potatoes, and other produce, which is carted into the towns, and manure is, in very many cases, brought back at a price cheaper than it could be produced at home. The absence of stock in many farms is due to these features. The farms generally command a good rent, but they are well managed, and there is evidence of great personal attention, enterprise, and example to the labourers on the part of the tenants themselves, which might, with advantage, be copied in other districts.

The comparative tables for Lancashire and Cheshire, on page 268, have been kindly supplied by Mr. R. H. Rew, of the Board of Agriculture.

The Judges and the writer desire to return hearty thanks to the competitors for the hospitality and kindness extended to them.

WM. H. HOGG.

Woburn Experimental Farm,
Aspley Guise, R.S.O

We subscribe to the foregoing Report—

C. EDWARD H. COOKE,
JOHN MYATT.

REPORT OF THE COUNCIL TO THE
ANNUAL GENERAL MEETING OF GOVERNORS
AND MEMBERS OF THE SOCIETY,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON,

On WEDNESDAY, December 7, 1910, at 3 p.m.

MR. F. S. W. CORNWALLIS (Trustee) in the Chair.

1. Since the Annual Meeting of the Governors and Members held in December last, the Royal Agricultural Society of England, in common with the whole of the British Empire, has sustained a great loss in the death of their beloved Sovereign, King Edward VII. On the 12th May, a few days after the sad event became known, a meeting of the Council was specially convened for the purpose of passing loyal and dutiful Addresses of Condolence with His Majesty King George V., and with Her Majesty Queen Alexandra. Gracious acknowledgments of these Addresses were subsequently received by the Society through the Secretary of State for the Home Department.

2. His Majesty King George has ever been a true friend to the Royal Agricultural Society, and has already filled the Presidential Chair on two occasions—in 1897 and in 1903. Since his accession to the Throne, His Majesty has conferred upon the Society further marks of his Royal favour by becoming Patron of the Society, and by graciously accepting the office of President for the year 1911.

3. Turning to the ordinary business of the Society, the Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 8th, 1909; 4 new Governors and 580 new Members have joined the Society, and 5 Members have been re-instated under By-law 14; whilst the deaths of 5 Life Governors, 6 Governors, 84 Life Members, and 157 Annual Members have been reported. A total of 33 Members have been struck off the books under By-law 12, owing to absence of addresses, 2 Governors and 93 Members under By-law 13, for arrears of subscription; and 3 Governors and 192 Annual Members have resigned.

4. The Society's losses by death, since the report was presented, include the following, who had all, at some period, been Members of the Council: Earl Spencer, K.G., who was President in 1898, joined the Society in 1860, had been on the

Council since December, 1874, and only two years ago resigned the office of a Trustee of the Society; Mr. Garrett Taylor, who served on the Council from 1859 to 1895, and at the time of his death was one of the Honorary Secretaries of the Local Committee formed in connection with the Norwich Show of next year; Mr. James Hornsby, a Councillor from 1888 to 1905; Mr. Alfred Ashworth, a Councillor from 1880 to 1905; and Mr. George Adams, Mr. Robert Forrest, and Mr. Herbert Tallent, who, since August, 1905, have represented respectively the Divisions of Berkshire, Glamorganshire and Norfolk.

5. Amongst other Governors and Members whose loss by death, since the last Annual General Meeting, the Society has to deplore, are the Earl of Lathom (Gov.), the Lord Bishop of Lincoln, Lord Calthorpe, Lord Greville, Lady de Rothschild, the Right Hon. Sir H. Aubrey-Fletcher, Bart., C.B., M.P. (Gov.), the Right Hon. Sir W. B. Gurdon, K.C.M.G., C.B., the Right Hon. J. G. Talbot, the Right Hon. Jas. Tomkinson, M.P., the Hon. and Rev. A. C. Baillie-Hamilton, the Hon. Maurice R. Gifford, C.M.G., the Hon. F. G. Lindley Meynell, Sir G. A. Drummond, K.C.M.G., Sir W. N. Abdy, Bart., Sir Edmund Buckley, Bart. (1864), Sir M. E. Buller, Bart. (1852), Sir J. R. Heron-Maxwell, Bart., Sir Fredk. T. Mappin, Bart., Col. Sir R. H. A. Ogilvy, Bart., Sir R. W. H. Palmer, Bart., Sir Walter Palmer, Bart. (Life Gov.), Baron Sir J. H. W. von Schroeder, Bart. (Life Gov.) (1869), Sir Walter Scott, Bart., Sir C. W. Strickland, Bart. (1848), Sir T. S. Tancred, Bart., Sir H. A. D. Tichborne, Bart., Captain Sir W. H. Wilson Todd, Bart., Sir Edmund H. Verney, Bart., Sir James Bailey, Mr. A. D. Berrington (1864), Mr. T. Blandford (1864), Rear-Admiral R. F. Britten, Mr. G. C. Carew-Gibson (1869), Mr. James A. Carson (1868), Mr. John C. Clayden (1862), Mr. F. T. Cobbold, M.P., Col. J. B. Cookson, C.B., Mr. Henry R. Cooper (1862), Mr. James B. Coultas, Mr. G. J. Courthorpe, Mr. Isaac Dixon, Lt.-Col. C. Villiers Downes, Mr. Edmund Elsey, Col. R. Feilden (1865), Com. C. J. Fellowes, R.N., Mr. Latimer Harper (1854), Mr. S. Atkinson Jowett, Mr. E. T. Kidner, Mr. A. J. R. Boughton Knight (1861), Mr. Gervase Markham, Mr. C. R. Palmer Morewood (Life Gov.), Mr. W. C. Morland (1845), Mr. Joseph Moore (1858), Mr. J. M. Oubridge, Mr. Martin Pate, Mr. P. P. Pennant (1861), Mr. James A. Piggot (1858), Mr. J. T. Powell (1849), Capt. J. C. F. Ramsden (1863), Mr. E. Scriven (1863), Mr. Francis W. Silvester, Mr. John Wallis Titt, Mr. Joseph Topham, Col. James G. Unite, Mr. R. R. Verrall (1851), Mr. Arthur Vipan, Col. A. F. Walter (Gov.), Mr. John White (Warrington), and Mr. T. P. Wilkes.

6. The above, and other changes, bring the total number of Governors and Members now on the Register to 9,934, divided as follows:—

- 1 Foundation Life Governor (Mr. W. Barrow Simonds);
- 167 Annual Governors;
- 88 Life Governors;
- 6,759 Annual Members;
- 2,888 Life Members;
- 31 Honorary Members;

9,934 Total number of Governors and Members, as against a total of 9,920 Members on the Register at the time of the last Annual Report.

7. During the year H.R.H. Prince Christian, K.G., has been appointed a Trustee, Sir Richard Cooper, Bart., a Vice-President, and the following Members of Council have been elected to fill vacancies caused by death: Major H. G. Henderson, M.P. (Berkshire), and Mr. D. T. Alexander (Glamorganshire).

8. The Members of Council who retire by rotation at the forthcoming Annual Meeting are those representing the electoral districts of Group B. The necessary measures have been taken with a view to the election or re-election of representatives for those electoral districts. Elections are also taking place in the following divisions: Staffordshire, to fill the vacancy created by the election of Sir Richard Cooper, Bart., as a Vice-President; Norfolk, which county is entitled by virtue of its increased membership to elect a second representative, in addition to filling the vacancy which exists owing to the death of Mr. Herbert Tallent; and Cheshire, where the number of members is now large enough to entitle the Division to a second representative.

9. Under the By-laws the balance-sheet has to be presented for consideration at the Annual General Meeting. The Council therefore beg to submit the balance-sheet for the year 1909, with the Statement of Ordinary Income and Expenditure. These accounts were published in Volume 70 of the Journal issued to Members last March, having been duly examined and certified as correct by the Auditors appointed by the Members, and by the professional Accountants employed by the Society.

10. After an interval of thirty-three years, the Show of the Society has for the third time been held at Liverpool, in the Wavertree Playground, the use of which splendid site was kindly granted by the Donor and Trustees of the land. The Show was excellent in all the sections, and the showyard allowed of the disposition of the various departments to the greatest advantage, not only to the Executive and the Exhibitors, but to visitors also, who appreciated the facility with which they could inspect the exhibits.

His Royal Highness Prince Arthur of Connaught visited the Show as the representative of His Majesty The King. On arrival at Liverpool on the Wednesday morning His Royal

Highness was received by the Lord Mayor and Corporation, and proceeded at once to the showyard. Prince Arthur was the guest of the Corporation at Newsham House, and on Thursday drove through the City to pay his second visit to the Show. His Royal Highness honoured the President and Council on both occasions with his company at luncheon in the Royal Pavilion. Before leaving, Prince Arthur expressed the pleasure his visit to Liverpool had afforded him, and referred to the very great interest with which he had inspected the exhibits and the Showyard generally.

One of the greatest features of the Show was the parade of 200 working horses in their gears in the Horse Ring, and the sight of this large enclosure, filled with some of the best cart-horses in the country, will not be easily forgotten by those who were so fortunate as to view the unique exhibition. The horses were sent by the various team-owners in Liverpool, and doubtless there is no other city in the world which could have produced such a show of splendid animals.

As in the year 1877, when the Society last visited Liverpool, the weather was very bad on three days of the Show, and undoubtedly deterred many from attending; but notwithstanding this, it is anticipated that when the audited accounts are presented to the Members at the General Meeting, it will be found that the excess of receipts over expenditure will be £5,482.

The Society received a most cordial welcome from the County and the City, and the Liverpool Local Committee, with the Lord Mayor at its head, did everything possible to ensure the success of the Show. The active interest of the Lord Mayor in everything connected with the Society's visit was sustained until the end of the Show, on each day of which he was present, accompanied by the Lady Mayoress.

11. Seven machines competed in the Trials of Agricultural Motors, which were held at Bygrave Farm, Baldock, Hertfordshire, from Tuesday, the 9th August, to Monday, the 15th August. In the first place, each motor was tried with a three-furrow plough on a five-acre plot of ground. This was in no sense a plough trial, as in each case identical ploughs were used, the object being to ascertain which was the best general purpose motor for a moderate-sized holding, ploughing forming one of the purposes to which the motor would be put. All the machines completed their plots, and, the land being fairly light, subsequent trials were carried out on heavier land. All the machines were tried Harvesting, and with the exception of two machines, each motor drew two 6-foot self-binding harvesters, all coming out of the trial satisfactorily. The Traction trials on the road took place over a course of about 12½ miles, in which at places there were some steep inclines. Each competitor declared what weight he would haul, and had to make two circuits of the course, or 25

miles in all. With one exception, the motors fairly fulfilled the work imposed upon them. Throughout the Trials, Brake tests were made, during which the power developed and fuel and water consumption were carefully noted. On the completion of the Trials, when the figures obtained from each test were carefully analysed, the Judges had no difficulty in placing first the engine entered by Messrs. J. and H. McLaren, Midland Engine Works, Leeds, to whom the Society's Gold Medal has been awarded. The official report on these trials is now in preparation, and will be issued shortly; price 1s. to Members, and 2s. 6d. to non-members.

12. The Show at Norwich in 1911 will be held under the Presidency of HIS MOST GRACIOUS MAJESTY THE KING, from Monday, June 26th, to Friday, June 30th. There is every indication that the Norwich Show will be as extensive as any of those of recent years which have been so successful. It is a matter of great satisfaction that, at the suggestion of the Society, the Board of Agriculture and the Colonial Office have arranged for the Colonial Ministers of Agriculture to be invited to attend the Show, on which occasion they will be entertained for the Show week by the Lord Lieutenant of Norfolk and the other large landed proprietors in the County. The Royal Norfolk Agricultural Association have agreed to forego their annual Show next year and have made a handsome contribution to the Fund raised by the Norwich Local Committee. The Suffolk Agricultural Association have also, as in 1886, subscribed liberally to the Local Fund.

13. The Schedule of Prizes for Live Stock, Poultry, Produce, &c., at the Norwich Show, which will be issued early in the New Year, will be on a very liberal and comprehensive scale. The Norwich Local Committee have promised a handsome contribution towards the Prizes, and offers of Champion and other Prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Suffolk Horse Society, Hunters' Improvement Society, Polo and Riding Pony Society, Welsh Pony and Cob Society, Shorthorn Society, Dairy Shorthorn (Coates's Herd Book) Association, Lincolnshire Red Shorthorn Association, Hereford Herd Book Society, Devon Cattle Breeders' Society, South Devon Herd Book Society, Longhorn Cattle Society, Sussex Herd Book Society, Welsh Black Cattle Society, Red Poll Society, Aberdeen Angus Cattle Society, English Aberdeen-Angus Cattle Association, Galloway Cattle Society, Ayrshire Cattle Herd Book Society, English Jersey Cattle Society, English Guernsey Cattle Society, English Kerry and Dexter Cattle Society, South-down Sheep Society, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Dorset Down Sheep

Breeders' Association, Dorset Horn Sheep Breeders' Association, Ryeland Flock Book Society, Lincoln Long-Wool Sheep Breeders' Association, Leicester Sheep Breeders' Association, Society of Border Leicester Sheep Breeders, Derbyshire Griststone Sheep Breeders' Society, Cotswold Sheep Society, Kent or Romney Marsh Sheep Breeders' Association, Devon Long-Wool Sheep Breeders' Society, Dartmoor Sheep Breeders' Association, Exmoor Horn Sheep Breeders' Association, and Lincolnshire Curly-Coated Pig Breeders' Association. Six Gold Challenge Cups, value 50 guineas each, are offered (1) for the best Hack and Riding Pony; (2) for the best Harness Horse in the Novice Classes; (3) for the best Single Harness Horse; (4) for the best pair of Harness Horses; (5) for the best Tandem; (6) for the best Four-in-Hand. The following cups are also offered:—£20 Silver Cup for the best Hunter Brood Mare; Fifty-Guinea Cup for the best group of one Shorthorn Bull and two Cows or Heifers in the Dairy Shorthorn Classes; £20 Cup for the best animal in the South Devon Cattle Classes; £15 Silver Cup for the best Longhorn animal; Twenty-five-Guinea Silver Cup for the best animal in the Kerry Classes; Twenty-five-Guinea Silver Cup for the best animal in the Dexter Classes; Fifty-Guinea Silver Bowl for the best group of one Ram and three Ewes in the Lincoln Sheep Classes; Sixty-Guinea Silver Cup for the best Border Leicester Ram or Ewe; Twenty-five-Guinea Silver Cup for the best Sow in the Large Black Pig Classes.

14. Sixty-seven entries have been received for the prizes amounting to £480 offered by the Norwich Local Committee for the best managed Farms in the Counties of Norfolk and Suffolk:—

CLASS I.—Farm, chiefly arable, of 500 acres or over, exclusive of Heath and Saltings. First Prize £100; Second Prize, £50; Third Prize, £20. (13 Entries.)

CLASS II.—Farm, chiefly arable, of not less than 250 acres and under 500 acres, exclusive of Heath and Saltings. First Prize, £75; Second Prize, £30; Third Prize, £15. (18 Entries.)

CLASS III.—Farm, chiefly arable, of not less than 100 acres and under 250 acres, exclusive of Heath and Saltings. First Prize, £50; Second Prize, £25; Third Prize, £10. (16 Entries.)

CLASS IV.—Farm, chiefly arable, of not less than 50 acres and under 100 acres, exclusive of Heath and Saltings. First Prize, £40; Second Prize, £20; Third Prize, £10. (11 Entries.)

CLASS V.—Farm, chiefly arable, of not less than 10 acres and under 50 acres, exclusive of Heath and Saltings. First Prize, £20; Second Prize, £10; Third Prize, £5. (9 Entries.)

The first visit of the Judges commenced on the morning of Tuesday, the 8th November, and a second inspection of Farms will be held in the Spring. The final inspection of selected Farms will take place in the month of June.

15. It has been decided to hold a trial of Potato Diggers and Sorters in 1911. The conditions of Trial are now under consideration by the Council.

16. Invitations to hold the Show of 1912 were received from the authorities of the City of York and the town of Doncaster. After the sites offered had been inspected by a Committee and Deputations from both places had been received by the Council, it was decided to accept the invitation tendered by the Corporation of Doncaster. The Yorkshire Agricultural Society have agreed to forego their Annual Show on the occasion of the Society's visit to Yorkshire in the year 1912.

17. An invitation to hold the show of 1913 in the City of Bristol has been extended to the Society by the citizens through the Lord Mayor of Bristol, and unanimously accepted by the Council at their Meeting on the 2nd November last. The proposed site of the showyard is on the Clifton and Durdham Downs, and is the same ground as that occupied by the Society on the occasion of the Show in 1878.

18. In November, 1909, the Council passed a resolution requesting a Special Committee "to consider the provisions of the Development Bill—should it become an Act—in so far as they related to Agriculture." This Committee have held a number of meetings during the year, at two of which they have had the opportunity of conferring with Sir Thomas Elliott, Secretary of the Board of Agriculture. The Committee have also been favoured with the views of a number of scientific experts with regard to the needs of Agricultural Research work in this country. After full consideration, the Committee made certain recommendations, embracing general principles, for the assistance of Stock Breeding and Agricultural Research. These recommendations have been approved by the Council and transmitted to the Board of Agriculture. A specific application for an annual grant from the Development Fund in aid of the Society's Experimental Station at Woburn has been made to the Commissioners.

19. An intimation having been received from the German Agricultural Society to the effect that a party of their Members were proposing to visit this country in the month of August last, arrangements were made for the party to inspect the Society's Experimental Station, and various farms and estates in different parts of England and Scotland. On their arrival in London the party—numbering about thirty—were received in the afternoon by the President and Council at the Society's House, and in the

evening a Member of the Council entertained them at Dinner at Princes' Restaurant. The tour of the visitors extended over a period of three weeks; and, since the conclusion of their visit, a letter has been received from the President of the German Agricultural Society, thanking the Council for their reception of the party and for the excellent arrangements made for their tour, from which they derived great pleasure. Throughout their visit they experienced the kindest hospitality at the hands of the Members of the Society and others who received them.

20. About the same number of samples as in 1909 have been analysed, on behalf of Members, in the Society's Laboratory, during the past twelve months, viz., 469 for 1910 as compared with 475 for 1909. In connection with the Liverpool Show, 44 samples of Oiler and Perry and 146 of Milk were examined, in addition. The Chemical Privileges underwent revision during the year, and the revised statement issued to members is more attractive. The unsatisfactory condition of matters in relation to the working of the Fertilisers and Feeding Stuffs Act has, on several occasions, been the subject of consideration by the Chemical Committee, on whose report representations have been made by the Council to the Board of Agriculture, urging the need of amendment of the Act. The issue of private circulars to Members containing details of cases of adulteration or misrepresentation has been continued, and is found to serve a very useful purpose. In these are given reports of (a) Middlings adulterated with rice husks; (b) "Bombay" cotton cake sold as "Egyptian"; (c) Barley meal adulterated with oat husks and other impurities; (d) Dissolved bones not answering to the description and very excessive in price; (e) Sharps with weed seeds and excessive sand; (f) "Round Oil Feeding Cake" with excessive sand. The purchase in the case of (d) was from a Farmers' Co-operative Society.

21. At the Woburn Experimental Station, the work done has been of sustained interest and importance. On the Farm, in addition to the general experiments, trials have been made of the new varieties of cross-bred wheats introduced by Professor Biffen, of Cambridge, and also of French wheats. The residual values of calcium cyanamide and nitrate of lime have been ascertained in comparison with nitrate of soda and sulphate of ammonia. The Pot-culture work has included further experiments on the influence of magnesia on plants, and these give results of striking interest. The Hills' experiments concerned chiefly the use of zinc in different forms and of lithium. The question of green-manuring with leguminous and non-leguminous crops respectively has been advanced a further stage. An exhibit from the Station was prepared for and sent to Buenos Aires Exhibition, and one was sent, as usual, to the Society's Annual Show at Liverpool. The Farm and Station have, during

the year, been visited by several large parties, and also by a more than usual number of private individuals. On July 15th the annual visit of Members of the Society was made, about seventy members taking part. The Council made their official inspection on July 28th, and on the following day a most interesting visit to the farm was paid by the members of the German Agricultural Society under the guidance of Dr. Skalweit. The foreign visitors expressed much satisfaction with all that they saw. Parties have also been conducted over the Farm from the Agricultural Education Committee of the Glamorgan-shire County Council, the Land Agents' Society, and others. In connection with the establishment of the Development Fund, application has been made, on behalf of the Society, for a substantial grant for the purpose of continuing and furthering the Society's research work at the Woburn Experimental Station, and this, it is confidently hoped, will be given. An important extension of the Farm work has been made during the year by the acquisition of about 50 acres of grass land in the near vicinity of the present Farm. This has been effected mainly with the object of carrying out the experiment with calves, to which reference is made in paragraph 26. Arrangements are in progress for the covering-in of the open yard at the Farm, thereby rendering it more suitable for the purpose of cattle-feeding experiments.

22. Since January 1st, some 350 inquiries from members of the Society have been dealt with. The majority of these have been concerned with the purity and germination of agricultural seeds. English-grown seed has proved better than one might have expected after such a season as 1909. Mangold seed was, on the whole, less satisfactory than any other seed. One or two samples of wheat purchased for seed were exceedingly bad, one sample only germinated five per cent. Fungoid diseases have been, perhaps, more abundant than usual. Some forty specimens of infected plants were sent for examination. For the most part these were attacked by common diseases, but the following are not so generally met with:—Silver-leaf on Black currant, *Pseudomonas* on Swede, and *Hypomyces* on Mushrooms. Two diseases, one on Mangold the other on Asparagus, are apparently new to science and are now under investigation. Some thirty specimens of weeds have also been received for identification and for suggestions with regard to their eradication. General inquiries have covered a wide range: the commonest have been concerned with either the improvement of pastures or the suitability of special varieties of wheat and barley for certain conditions.

23. The Zoologist's department has been busier during the past season than in any previous year, and the equipment furnished by the Society has rendered possible the carrying

out of various experiments in the use of insecticides. Advice has been given to Members with regard to the treatment of a great variety of pests, including animal parasites, and insects injurious to farm crops, fruit, and forest trees. Much time has been devoted to the investigation of the life-history of the Raspberry Beetle and other insect pests.

24. The Board of Agriculture returns show only a slight difference in the prevalence of Anthrax and Swine Fever as compared with the previous year, but the outbreaks of Sheep-Scab have been fewer, and appreciable progress appears to have been made in the stamping out of Glanders. A very disturbing event of the year to stockowners was the appearance of Foot-and-Mouth Disease in Yorkshire in the month of July. When first detected the disease had already attacked ten cattle and a pig. The Board of Agriculture, with great promptness, caused the whole of the animals on the farm (26 cattle, 94 sheep, and 3 swine) to be slaughtered, as also three cows and three calves which had recently been moved from the farm to other premises. About a week after the disease was detected in a yearling beast on the immediately adjoining farm, and in that case also the whole of the cattle (35) and sheep (107) were promptly slaughtered. These rigorous measures fortunately brought the outbreak to an end. It is understood that searching inquiry failed to reveal the means by which the infection was introduced.

25. At their meeting on the 2nd November, the Council, on the motion of the EARL OF NORTHBROOK, seconded by Mr. G. G. REA, unanimously passed the following resolution, of which copies have been forwarded to the Board of Agriculture and the Board of Trade:--

"That, for the protection of our herds and flocks, and in order to prevent the spreading of foot-and-mouth disease and anthrax, it is of the greatest importance that all ships, wagons, and other vehicles which have carried foreign skins, wool or other substance likely to bring or spread disease, should be thoroughly disinfected before being used for the purpose of carrying cake, feeding stuffs, or materials used in the manufacture of feeding stuffs.

"Further, that it is desirable, if possible, to prevent the carriage of skins, wool, etc., on the same ships as cake and other feeding materials; or, if they must be carried on the same boats, that adequate precautions should be taken to prevent the contamination of feeding stuffs."

26. It has been decided to carry out experiments with calves at the Woburn Farm, for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents. Lord Rothschild has generously undertaken

to provide, free of all expense to the Society, thirty calves for the purposes of the proposed demonstration. The arrangements are in the hands of a Special Committee of the Council, and Sir John McFadyean has kindly undertaken to supervise the demonstration.

27. With the view of enabling the Royal Veterinary College to make further investigations as to John's disease, an obscure disease of sheep met with in certain parts of England, and vaccination as a preventive against tuberculosis in cattle, the Council have agreed to make a special grant to the College of £200 per annum for three years, commencing on the 1st January, 1911.

28. Evidence on behalf of the Society has been given by the Earl of Northbrook before the Departmental Committee on the British Export Trade in Pedigree Live Stock, and by Mr. Mansell and Mr. Tindall before the Departmental Committee on Swine Fever.

29. As the result of the examination at the Royal Veterinary College for the Society's medals for proficiency in Cattle Pathology, including the diseases of Cattle, Sheep and Pigs, the Silver Medal has been awarded to Mr. D. Meadows, of Thornville, Ballycooley, Co. Wexford, and the Bronze Medal to Mr. R. C. G. Thwaytes, of the Red Lodge, South Hill Avenue, Harrow-on-the-Hill.

30. Lord Moreton, Mr. Luddington, and Mr. Ernest Mathews, have kindly undertaken to represent the Society at the Rural Education Conference, and Mr. Mathews and Mr. Reynard have been appointed by the Society as Members of the Preliminary Committee formed in connection with the proposed scheme for the establishment of a National Poultry Institute and Experimental Station.

31. The Society joined with the Breed Societies in an Exhibit at the Brussels Exhibition. The Exhibit was destroyed by the disastrous Fire which occurred on August 14th, but fortunately a duplicate of the Exhibit had been sent to the "Centennial" Exhibition at Buenos Aires, and will be available for the Turin Exhibition of next year.

32. The Trustees of the "Queen Victoria Gifts" Fund have made a grant to the Royal Agricultural Benevolent Institution of £140 for the year 1910, which on this occasion will be added to the fund being raised in connection with the "Jubilee" of the Institution, and from which Fund all Candidates who are unsuccessful will receive the full Pension for one year. To fill the vacancy caused by the death of Earl Spencer, Mr. F. S. W. Cornwallis has been elected a Trustee of the Queen Victoria Gifts Fund.

33. The Council, at their Meeting held in February, had before them a Special Appeal which was being made in connection with the "Jubilee" of the Royal Agricultural Benevolent Institution, when, on the motion of the Duke of Devonshire, it was resolved "That a sum of Twenty Guineas be voted as a donation from the Society to the funds of the Royal Agricultural Benevolent Institution." In moving this resolution, his Grace said it was unusual for the Society to make subscriptions, but the Institution had already done much good, and had met with so much approval from the Members, that he hoped that the Society as a body would approve of the contribution made by the Council.

34. The Eleventh Annual Examination for the National Diploma in Agriculture was held at the Leeds University from the 25th to the 28th April, 1910, when 31 candidates were awarded the Diploma, the first candidate obtaining honours. For list of successful candidates see pp. 282 and 283.

35. The Examinations for the National Diploma in Dairying were held this year for English students from September 17th to 23rd, at the British Dairy Institute and University College, Reading; and for Scottish students from September 24th to 30th, at the Dairy School for Scotland, Kilmarnock. Thirty-two candidates were examined at Reading, of whom twenty-two passed, and thirty-three candidates at Kilmarnock, of whom twenty-three passed. The names of the successful candidates will be found on pp. 286 and 287.

By Order of the Council.

THOMAS McROW,

Secretary

16, BEDFORD SQUARE,
LONDON, W.C.

NATIONAL AGRICULTURAL EXAMINATION BOARD.

I.—REPORT ON THE RESULTS OF THE ELEVENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

HELD AT LEEDS, APRIL 25 TO 28, 1910.

1. THE Committee entrusted by the National Agricultural Examination Board with the conduct of the Eleventh Annual Examination for the NATIONAL DIPLOMA IN AGRICULTURE report that, by the courtesy of the authorities, the Examination was held at the Leeds University from April 25 to 28, 1910. In all 93 candidates entered, 45 in Part I, and 48 in Part II. Of the candidates who entered this year for Part II.—which comprises the subjects of Practical Agriculture, Agricultural Book-keeping (*or Mensuration and Land-Surveying*), Agricultural Chemistry, Agricultural Engineering, and Veterinary Science—six, who failed in one subject of Part I. in 1909, were allowed to take that subject *in conjunction* with the Second Part; and eight, who had previously failed in only one subject of Part II., came up for that subject *alone*

2. The result of the Examination in Part II was that 31 candidates (including two of the six who were also taking a Part I. subject, and seven of the eight who came up for one subject only) were successful, and, having now passed both Parts of the Examination, are entitled to receive the National Diploma in Agriculture, the first candidate gaining Honours. The names of the Diploma winners, in alphabetical order, are as follows :—

Diploma with Honours.

JAMES BERNARD GARNLTT, Leeds University

Diploma

FRED BANCROFT, Harris Institute, Preston

ARTHUR OWEN BLACKHURST, Harris Institute, Preston

REGINALD ARTHUR DALLEY, Harper-Adams Agricultural College, Newport, Salop

NORMAN ROE FOSTER, College of Agriculture, Holmes Chapel, Cheshire

ARTHUR GILLOTT, Leeds University

ALEXANDER GREGG, Technical School, Truro.

MATTHEW HENDERSON, Leeds University.

JEREMIAH ALFONSO HICKEY, Leeds University

JAMES RICHMOND HOLMES, Harris Institute, Preston.

THOMAS DUCKWORTH MARSH, Harris Institute, Preston

STEPHEN PASCAL MERCEUR, Harper-Adams Agricultural College, Newport, Salop.

MANGHARAM GURUDINAMAL MUKHI, Cambridge University.
 JOSEPH MURRAY, West of Scotland Agricultural College, Glasgow.
 WILLIAM NEWTON, Harris Institute, Preston.
 DANIEL GRANT O'BRIEN, West of Scotland Agricultural College, Glasgow.
 FRANK CLIVE OSBORNE, Harper-Adams Agricultural College, Newport, Salop.
 EDWARD PARKE, Leeds University.
 GABRIEL KINETON PARKER, Harper-Adams Agricultural College, Newport, Salop.
 WILLIAM THOMAS POWELL, University College of Wales, Aberystwyth.
 PINDI DAS SABHERWAL, University College, Reading.
 WILLIAM ALBERT SCOBY, Leeds University.
 JOHN SIMPSON, Leeds University.
 YU SHEE KWOK-SING, Midland Agricultural and Dairy College, Harris Institute, and West of Scotland Agricultural College.
 SYDNEY SKELTON, South-Eastern Agricultural College, Wye, Kent.
 ALLEN LAZY TATE, South-Eastern Agricultural College, Wye, Kent.
 MISS DOROTHY THOMPSON, Harris Institute, Preston.
 VICTOR PEDLEY WALLER, College of Agriculture, Holmes Chapel, Cheshire.
 ROBERT DUNCAN WEBB, University College of North Wales, Bangor.
 FRANK WILKINSON, Midland Agricultural and Dairy College, Kingston, Derby.
 JAMES WILLIAMS, Aberdeen and North of Scotland College of Agriculture, Aberdeen.

3. Of the 45 candidates who entered for Part I.—which comprises the subjects of Agricultural Botany, Mensuration and Land Surveying (*or Agricultural Book-keeping*), General Chemistry, Geology, and Agricultural Zoology—one had failed on a previous occasion, and 44 entered for the first time. As the result of the Examination in Part I., 25 candidates succeeded in passing in all the subjects, and are thus entitled to sit for Part II. of the Examination next year. The remaining 20 failed—eight in one subject only.

4. The following are the names of the successful candidates in Part I., placed in alphabetical order:—

LEONARD ASHWORTH, Midland Agricultural and Dairy College, Kingston, Derby.
 BENJAMIN BROWN, The Boat, Windermere.
 GEORGE HAMPODEN CHATFIELD, Harris Institute, Preston.
 JAMES DIXON, Harris Institute, Preston.
 NORMAN GARDNER, West of Scotland Agricultural College, Glasgow.
 JAMES SIMPSON GREEN, Aberdeen University.
 ROBERT HALL, Harris Institute, Preston.
 THOMAS HAMILTON, Leeds University.
 ARNOLD HENRY HILLER, College of Agriculture, Holmes Chapel, Cheshire.
 REGINALD WATT HUNTER, Leeds University.
 FREDERICK KEITH JACKSON, Leeds University.
 ARTHUR REGINALD LAMBERT, Harper-Adams Agricultural College, Newport, Salop.
 PATRICK WILLIAM MACKENZIE, Aberdeen and North of Scotland College of Agriculture, Aberdeen.
 GEORGE CHRISTOPHER MARTIN, Leeds University.
 EDWARD MILLER MELVILLE, West of Scotland Agricultural College, Glasgow.
 G. N. M. MORRELL, Leeds University.
 CYRIL HERBERT PAGE, Harper-Adams Agricultural College, Newport, Salop.
 E. ERNEST W. PAYNTER, Leeds University.
 ALFRED ERNEST ROBERTS, The Mount, Church Stretton, Salop.

JONATHAN ALAN ROBOTHAM, Harper-Adams Agricultural College, Newport, Salop.
 HARRY RANDOLPH TAYLOR, Harris Institute, Preston.
 JOHN PERCY THOMPSON, Harris Institute, Preston.
 JUSTIN JOSEY ARMSTRONG WALLACE, Midland Agricultural and Dairy College,
 Kingston, Derby.
 JAMES HERBERT WOOD, Leeds University.
 GORDON BURDASS YOUNG, Harper-Adams Agricultural College, Newport, Salop.

5. The Reports of the Examiners in the five subjects included in Part I. are as follows:—

1. AGRICULTURAL BOTANY. (200 Marks.)

Professor John Percival, M.A., F.L.S.

The work of the candidates this year was of somewhat unequal merit. The best men were well trained, but many of the candidates showed very imperfect acquaintance with the subject, some of them having received little or no practical instruction in it. Without neglecting the botany of seeds, grasses, and other agricultural plants, more time should be devoted to the examination of common parasitic fungi. The grains and ears of the chief cereals should receive more attention. Some of the candidates confused the ears of bearded wheat with those of barley, and a few had apparently never seen either the grain or ears of rye.

2. MENSURATION AND LAND SURVEYING. (200 Marks.)

Mr. H. Trustram Eve, F.S.I.

The plotting in connection with both surveying and levelling was well done. There appears to be a great lack of knowledge of the various scales. With regard to Ordnance Maps, there is an annual improvement in respect to these. The questions in mensuration were in many cases incorrectly answered, and in some cases the methods adopted were much too lengthy.

3. GENERAL CHEMISTRY. (200 Marks.) Professor W. W. Fisher, M.A.

The general character of the work was satisfactory, and the note-books produced by the candidates showed that most of them had been through an adequate course of practical work in the laboratory. Some had done quantitative analysis of food stuffs, milk, &c., but the majority had only had one year's training. Weakness in Organic Chemistry was noticed in certain instances, while in others the Physical Questions were not as well answered as they should be, but on the whole the work was at least equal to the standard reached in former years.

4. GEOLOGY. (100 Marks.) Dr. J. E. Marr, M.A., F.R.S., P.G.S.

The performances of the candidates were this year exceptionally good. The answers in the papers showed that the candidates had studied the subject with thoroughness, and the oral examination indicated that they were, in most cases, able to think, and not merely to acquire imparted knowledge.

5. AGRICULTURAL ZOOLOGY. (100 Marks.) Prof. J. Arthur Thomson, M.A.

About three-fourths of the candidates showed a sound elementary knowledge of Agricultural Zoology. About a third showed a very creditable familiarity with common insects of practical importance. Very few made any mistake in classifying the insect and the other specimen supplied as part of the written examination. The more practical questions were answered more effectively than those which involved general understanding, and in many cases too much detail was given in regard to modes of treatment. Quite a number noted more than six different methods of dealing with a turnip field infested with "beetle," and were apparently without any clear idea of what an embryo was. It is very desirable that more attention should be given to making simple drawings of the mouth-parts of insects and the like.

6. The Examiners in the five subjects included in Part II. report as below:—

6. PRACTICAL AGRICULTURE. (500 Marks.) Mr. T. A. Dickson, Dr. R. Shirra Gibb, and Professor W. McCracken.

The Examiners are pleased to be able to state that although there were few candidates who stood out as markedly excellent, the general standard was in their opinion up to the average of previous years. They have, however, again to report that the knowledge possessed by some of the candidates was very local in character, and that many of those who had an intimate acquaintance with the practice on a dairy farm had only a superficial knowledge of sheep and arable farming, and—although not in such a marked degree—the candidates who had practical experience

of arable farming seemed to be imperfectly acquainted with the routine of purely pasture farms. They would also again draw attention to the fact that many candidates waste much time in giving information not asked for. If the Examinees would care fully read all the paper before attempting to answer any of the questions the results would generally prove more satisfactory.

7 AGRICULTURAL BOOK-KEEPING (200 Marks) Mr W Home Cook, C A

Thirty eight candidates presented themselves for examination in this subject and of these thirty three obtained the necessary pass marks. The candidates as a whole showed a fair knowledge of book keeping but most of them might with advantage have given more attention to neatness and style.

8 AGRICULTURAL CHEMISTRY (200 Marks) Dr J Augustus Voelcker, Ph D, M A, F I C, and Dr Bernard Dyer, D Sc, F I C

The written papers were exceptionally good and the Examiners were specially pleased to find evidence that attention had been paid to matters of recent research. This applies particularly to a question relating to the sterilisation of soil which was answered very well throughout. On the other hand the question on the chemical advantages of rotation cropping was but poorly dealt with by the majority of the candidates. The two questions involving calculations were as a rule neglected. The *written* examination was less satisfactory as a whole than the written work. Taken altogether the Examiners considered that a decidedly higher standard had been attained than had been the case within recent years, and thus points to an advance in the general character of the teaching imparted.

9 AGRICULTURAL ENGINEERING (200 Marks)

Mr F S Courtney, M Inst C E, M I M E

The papers generally were quite up to the usual average. The marks obtained were not so high as on some former occasions. There were however fewer failures. In some cases where a concise answer was all that was required time was wasted with too much discursiveness. There is still room for considerable improvement in the way of sketching. A picture is not expected but an intelligible outline sketch is

10 VETERINARY SCIENCE (100 Marks)

Professor Sir John McFadyen, M B

The standard of knowledge exhibited by the candidates in this subject was fairly satisfactory.

7. The thanks of the Board are due to the authorities of the Leeds University, for their liberality and courtesy in placing the Large Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *vivâ voce* examination.

MORRISON (*Chairman*).

JOHN GILLESPIE.

THOMAS MURRAY.

JAMES MACDONALD.

16 Bedford Square, London, W.C.
June, 1910

EXAMINATION IN AGRICULTURE, 1911

The NATIONAL AGRICULTURAL EXAMINATION BOARD have decided to postpone the proposed change in the Examination for the National Diploma in Agriculture—of which notice was given in the Syllabus of this year. The Examination of 1911 will, therefore, be held under Regulations similar to those in force hitherto.

II.—REPORT ON THE RESULTS OF THE FIFTEENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1910.

1. The Fifteenth Annual Examination for the National Diploma in the Science and Practice of Dairying was held in September, 1910. The Examination for English candidates was held at the University College and British Dairy Institute, Reading, from September 17 to 23; and for Scottish Candidates at the Dairy School for Scotland, Kilnarnock, from September 24 to 30.

2. Thirty-two candidates were examined at the English centre. Of these, the following twenty-two satisfied the Examiners, and have therefore been awarded the National Diploma in the Science and Practice of Dairying:—

- MISS MARION SUSAN BLUNT, Midland Agricultural and Dairy College, Kingston, Derby.
 WILLIAM THOMAS CLARKE, British Dairy Institute, Reading.
 MISS MAY EVANS CONNELL, Midland Agricultural and Dairy College, Kingston, Derby.
 MISS MARY PERCIVAL COMER, Essex County Technical Laboratories Chelmsford, and British Dairy Institute, Reading.
 MISS RACHEL M. M. EVANS, University College of Wales, Aberystwyth.
 JOHN EVENS, JUNE., Midland Agricultural and Dairy College, Kingston, Derby.
 MISS DOROTHY ALLEYNE FENTON, British Dairy Institute, Reading.
 MISS ELEANOR FLINTOFF, Midland Agricultural and Dairy College, Kingston, Derby.
 WILLOUGHBY V. FOOT, British Dairy Institute, Reading.
 JUSTUS WATTS GEORGE, British Dairy Institute, Reading.
 ROBERT HART, British Dairy Institute, Reading.
 THOMAS BROWN HEWETSON, British Dairy Institute, Reading.
 ERIC F. HURT, Midland Agricultural and Dairy College, Kingston, Derby.
 DAVID HEDOG JONES, University College of Wales, Aberystwyth, and British Dairy Institute, Reading.
 MISS ELSIE JONES, University College of Wales, Aberystwyth.
 SAHIBZADA MAHMOOD ALI KHAN, British Dairy Institute, Reading.
 GEORGE LALLEMAND, Agricultural College, Holmes Chapel, Cheshire and British Dairy Institute, Reading.
 A. K. YEGNA NARAYAN AIYER, British Dairy Institute, Reading.
 REGINALD WOODROUGH NAYLOR, British Dairy Institute, Reading.
 JOHN SAMUEL POWNALL, Midland Agricultural and Dairy College Kingston, Derby.
 ROBERT H. TOMPKINS, Hants. C.C. Farm School, Basing, and British Dairy Institute, Reading.
 MRS. LILY VLADOYANO, British Dairy Institute, Reading.

3. Thirty-three candidates were examined at the Scottish centre, of whom the following twenty-three satisfied the Examiners, and have been awarded the Diploma:—

MISS CHRISTINA C. ARTHUR, 115 Finlay Drive, Dennistoun, Glasgow.
MISS AGNES BANNATYNE, North Ledaig Farm, Benderloch, near Oban.
MISS SUSANNA J. DEVERES, Clougherney, Carndonagh, Co. Donegal.
JAMES BRYCE FISHER, The Manse, Ringford, Kirkcudbright.
ANDREW THOMSON FOWLIE, Auchentumb, Strichen.
THOMAS GILLILAND, Haughyett Farm, Mauchline.
MISS JESSIE DOWNIE GRAY, Bullochallan Callander.
THOMAS HAMILTON, 4 Stanley Terrace, Middlesbrough.
JEREMIAH ALFONSO HICKEY, Lisfuncheon, Cahir, Ireland.
MISS ELLEN LINDSAY IRELAND, East Balmuir, Airthroath.
SAMUEL ALEXANDER KILPATRICK, Kirkbryde, Kirkcolum, Stranraer.
BENWICK HUTSON LINTON, Agnesville, Rothesay.
JAMES MCCLATCHIE, Millerston, Mauchline.
DANIEL GRANT O'BRIEN, 31 Methuen Park, Muswell Hill, London.
E ERNEST W. PAYNTER, Battens, Bercalston, Devon.
WILLIAM H. RASON, 51 Crystal Palace Park Road, Sydenham, London.
ALEXANDER EWING REID, 315 Bath Street, Glasgow.
MISS JEANIE S REID, Meryhagen Farm, Auchentiber, Kilwinning.
MISS JANET STRANG, East Bedcow, Kirkintilloch.
WILLIAM STRANG, JUNE., East Bedcow, Kirkintilloch.
HERBERT WIGNALL, Moss Lane, Hesketh Bank, near Preston.
DAVID WYLLIE, Glissock Farm, Fenwick, Kilmarnock.
MISS MARY F. YOUNG, Croilburn, Hareshaw Moor, Fenwick.

4. The Examiner in General Dairying (Mr. John Gilchrist, who acted at both centres) reports that at the English centre the work in practical butter-making was of a higher class, taking it all over, than in any former year. The improvement, generally, consisting of attention to details, neatness, and method, with an improvement in the make-up of the butter. The answers to the written questions also showed a clearer grip of the practical work on a dairy farm, but defective knowledge of the work and business methods in connection with creameries, and in the art of making up balance-sheets. At the Scottish centre the butter-making, with one or two exceptions, was also carried out in a creditable manner. A number of the answers to the written questions were incomplete, and judging by past years the general intelligence was under the average. The arrangements for the work to be carried through at both centres were very complete.

5. Mr. John Benson, the Examiner in Cheese-making, in his report, says that "this year's candidates were all particularly well up in the practical work of cheese-making. A great improvement was manifest in the manufacture of blue-moulded cheeses at the Kilmarnock centre. The arrangements made for the conduct of both Examinations were most satisfactory, and I fail to see how any improvement in this direction is possible.

"At some recent Examinations held at Reading it has been stated that candidates who had been pupils of the Reading Institute had an advantage over strangers in the matter of the milk supply—in short, that they were given milk to make up into cheeses which had been sent in by the farms usually supplying the Institute with milk. To a certain extent such candidates would secure an unfair advantage, as they would be conversant with the peculiarities and cheese-making qualities of the milk. This year, to avoid any semblance of favouritism, the whole of the usual supply was separated and the cream mixed with other purchased cream and dealt out impartially to all candidates. The milk supply for the whole of the cheeses made during the Examination was obtained from a West of England creamery. Before being dealt out to the candidates it was placed in one large vessel and carefully mixed so that each candidate received milk of exactly similar quality and in the same condition as to ripeness, &c. This method of obtaining and dealing with the milk placed all candidates on an equal footing, as none of them had any previous knowledge of the condition of the milk supply.

"The papers set the candidates this year were answered fairly well, but no better than at some previous Examinations. Most of the candidates were well informed and sound in the principles of Cheese-making, but lacked knowledge of business matters relating to the management of creameries and cheese factories. Future candidates would do well to devote more attention to the business side of dairying, as without such knowledge their management of large dairies would end in failure. Most of the failures were in the written and oral part of the Examination. I regret that this was so, as some excellent and really practical cheese-makers were amongst these failures."

6. The Examiner in Chemistry and Bacteriology at the English centre (Dr. J. Augustus Voelcker, M.A., B.Sc.), states that in this part of the Examination a distinctly higher standard has been attained all round than he has met with before. Questions one would probably have hesitated to put a few years back have on this occasion been answered with more than fair accuracy, and, in several cases, with real excellence. More especially has attention been paid to the bacteriological side of the subject, and would mark a clear advance in the teaching of this science in its application to Dairying. The question which presented the greatest difficulty was that relating to the bacteriological examination of water, and this was either omitted, or but lightly touched upon, or, on the other hand, was more than ordinarily well handled. In the *vivâ voce* part of the Examination the general impression given was that though the application of Chemistry to dairy matters

was well got up, yet here was a general "shakiness" as regards sound knowledge of the elementary facts and principles of Chemistry. More careful attention should be paid to this in the future.

7. The Examiner in Chemistry and Bacteriology at the Examination in Scotland (Dr. T. W. Drinkwater, F.R.S.E., F.I.C.), reports that generally speaking the candidates were not so well prepared as they were last year. Some of them had not realised the scope of the Examination and had not devoted sufficient time to the theoretical work. There were, however, one or two exceptions to this.

MORETON,
Chairman.

16 Bedford Square, London, W C
November, 1910.

ANNUAL REPORT FOR 1910 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.¹

ANTHRAX.

THE following Table shows the number of outbreaks of this disease, and the total number of animals attacked in each of the last six years:—

Year		Outbreaks		Animals attacked
1905	...	970	...	1,317
1906	...	939	...	1,330
1907	...	1,081	...	1,456
1908	...	1,105	...	1,429
1909	...	1,317	...	1,698
1910	...	1,496	...	1,776

Unfavourable as is the position revealed by these figures, it could be made to appear much worse by including in the Table the statistics relating to the period 1895-1904, for during the last fifteen years the number of outbreaks reported annually has increased by nearly 300 per cent. The earlier figures, however, must be regarded as very inaccurate, both because at that period knowledge regarding the disease was less widely diffused among farmers, with the result that many cases were not reported, and because the diagnosis was often

¹ In return for special privileges which the Royal Veterinary College allows to members of the Society, the College receives an annual grant of 200*l.* from the Society. With a view to enabling the College to carry out investigations regarding certain diseases of cattle and sheep, the Society have also agreed to make a special grant to the College of 200*l.* per annum for three years, commencing January 1, 1911.

arrived at without microscopic examination of the blood of the suspected animals, and was therefore often erroneous.

During the period embraced in the Table the practice of resorting to microscopic examination of the blood before pronouncing the case to be one of anthrax has been general, but, unfortunately, there is good reason to believe that errors in diagnosis are still very frequent. The general effect of such errors is to increase the number of reported outbreaks, for the error usually lies in mistaking putrefactive bacteria present in the blood for anthrax bacilli, and seldom in the opposite direction. According to the recent annual reports of the Chief Veterinary Officer to the Board of Agriculture, the mistakes thus made introduce an error of nearly 30 per cent. into the published returns. This consideration, however, cannot be held accountable for the annual increase in the number of outbreaks shown in the Table, for the diagnosis of anthrax was less scientific in the earlier years and the proportion of errors must have been considerably greater than it is now.

A new Anthrax Order, which comes into force on January 1, 1911, is designed to reduce the number of errors in diagnosis, and to provide the Board with reliable evidence to show whether the disease is actually increasing to the extent indicated by the official statistics of the last ten years. Under this Order it will be the duty of the veterinary inspector to the local authority to send a blood preparation to the Board of Agriculture in every case in which, as the result of his own examination, he is unable to certify that the animal has not died from anthrax. In every such case the carcass will have to be dealt with as an anthrax carcass, and temporary precautions (including detention of cattle, sheep, or swine that may have been in contact with the dead animal) will be enforced to prevent the spread of infection, but the place will not be declared an anthrax-infected place until the diagnosis has been confirmed by one of the Board's veterinary inspectors.

There can be no doubt that this Order will mark a great improvement on the one which it replaces, in the sense that it will in the course of time provide much more reliable data regarding the incidence of the disease from year to year. Upon the whole it will also work to the advantage of owners, who will in future have the assurance that they are not being put to wholly unnecessary trouble and expense because a case of quite another nature has been wrongly diagnosed as one of anthrax.

The new Order does not in any way vary the provisions of the old in regard to the duty of the owner. The primary responsibility of the owner is to give notice of the fact to the

police whenever he has reasonable grounds for suspecting that any animal in his possession is affected with anthrax, and this statement has to be read in connection with that part of the Order which says that "where the owner or person in charge of an animal or carcass is charged with an offence against the Act of 1894 relative to anthrax, he shall be presumed to have known of the existence of that disease, unless and until he shows, to the satisfaction of the Court, that he had not knowledge thereof and could not with reasonable diligence have obtained that knowledge." It is a very important fact for owners to remember that Courts of Law have decided that when an animal has died from anthrax knowledge of the existence of the disease must be presumed if the death has occurred in the circumstances which are usual in cases of anthrax. In other words, if the death has been sudden, unexpected, and not obviously due to some other cause than anthrax, a Court of Law would almost certainly hold that the owner knew or ought to have suspected that the case was one of anthrax. To laymen that may appear unjust, and no doubt it has sometimes led to the conviction of persons who failed to report simply because they had never suspected, but, nevertheless, a laxer view of the owner's responsibility would be opposed to public interests.

Since anthrax was first made a notifiable disease a constant feature of the annual returns regarding it has been the smallness of the average number of animals attacked in each outbreak. During the last ten years the average has always been less than two, and the fact indicates that the measures which have been in force during that period have been fairly efficient for preventing the spread of infection at the places where the disease has broken out. In previous reports it has been pointed out that the small number of animals attacked in proportion to the outbreaks, and the fact that recurrent outbreaks on the same farm or premises are exceptional, constitute the strongest evidence that a great many of the outbreaks occurring in this country have their origin in infected materials (cake and other feeding-stuffs, and bone manure) imported from abroad. Such infection may antedate the shipment of those materials, but it is very probable that in a good many cases the contamination takes place during transit to this country, owing to the custom of carrying such notoriously dangerous articles as raw hides and hair on the same ship as feeding-stuffs. It would appear to be not unreasonable to demand that precautions should be taken against this danger by shippers.

It is, of course, very satisfactory to be able to assure an owner who has just lost an animal from anthrax that the chances are in favour of his not having a second case at that time. It

is this peculiarity of outbreaks in Great Britain which generally makes it inadvisable to recommend protective inoculation of the surviving animals by the method which was originally devised by the late M. Pasteur, and which has been practised on an immense scale in foreign countries where the conditions are quite different. Although it is not open to doubt that animals can be immunised against anthrax in this way, the method has two grave defects; one being that it is not free from danger, and the other that it requires a period of at least two or three weeks to confer any real protection on the inoculated animals. It hardly requires to be pointed out that one cannot urge an owner to resort to this method of prevention when, according to general experience in this country, an outbreak may be considered at an end when one or two animals have died. The moment when the first case has been detected is the time when preventive measures are most necessary if required at all, but for at least a fortnight after this the Pasteurian method of anti-anthrax inoculation is powerless to prevent infection or death. It is well, however, that farmers should know that there is another method of protecting animals against anthrax which has the double merit of acting immediately and with practically no risk. This method consists in giving the animal which it is desired to protect a dose of so-called anti-anthrax serum. An animal which has received a proper dose of this serum is protected against anthrax for the next two or three weeks, which in this country is usually the period of greatest danger after the first case has occurred.

But there is experience to show that a good anti-anthrax serum is not merely protective, but also actually curative, provided it is given by injection into the veins before the disease has entered on its last stage, and this suggests the means by which at least some hundreds of fatal cases of anthrax in this country might be saved. Although in many outbreaks of anthrax the first animal attacked is found dead or moribund without any premonitory symptoms having been noticed by the owner or attendants, there is a very simple means of obtaining warning regarding the subsequent cases in the same outbreak. It is only necessary to take the temperatures of the surviving animals at intervals during the following few days, for although the period of visible illness in anthrax is often very short there always is a time preceding this illness in which the temperature is much above normal. During this period the animal's life can generally be saved by means of the serum treatment. If this fact were generally known and acted upon there would rarely be two fatal cases of anthrax in the same outbreak.

GLANDERS.

The following Table shows the number of outbreaks and the number of individual cases of this disease during the past seven years :—

Year		Outbreaks		Animals attacked
1904	...	1,529	...	2,658
1905	...	1,214	...	2,068
1906	...	1,066	...	2,012
1907	...	854	...	1,921
1908	...	789	...	2,438
1909	...	533	...	1,753
1910	...	355	...	1,022

The steady decline in the prevalence of the disease during the last six years must be regarded as very satisfactory. During the period 1905-1907 the reduction in the number of outbreaks was largely due to voluntary efforts on the part of the owners of many of the large studs of railway and omnibus horses in London to eradicate the disease from their stables by systematically applying the mallein test to horses known or reasonably suspected to have been exposed to contagion, and isolating or destroying those that reacted. The marked progress made during the past two years must be put to the credit of the new Glanders Order which came into force on January 1, 1908. This Order indirectly enables local authorities to enforce the mallein test, since it gives them power to place restrictions on the movement of every horse in any stable in which a case of glanders has recently occurred, and to maintain these restrictions until the mallein test has proved that none of them is diseased. It also encourages notification and employment of the mallein test by allowing moderate compensation for every horse slaughtered by the local authority in consequence of a reaction to mallein and proved by post-mortem examination to have been actually glandered, and full compensation when a horse so slaughtered shows no evidence of disease on post-mortem examination. The Order, in fact, enforces the method of dealing with outbreaks which a good many owners had adopted voluntarily.

It must be acknowledged that even under the old system there might have been some reduction in the number of outbreaks during the last two years owing to the dispersal of many studs of cab-horses, and the diminishing size of most of the tramway and omnibus studs. The horse population of London and other large cities is, however, still large enough to provide plenty of scope for the activity of the glanders bacillus, and there can be no doubt that the present comparatively favourable position with regard to this disease is mainly due to the check which the existing Order placed on the sale of suspected horses. Indeed it may be questioned

whether the recent reduction in the number of cab and omnibus horses in London has not upon the whole operated unfavourably, for it must be remembered that this reduction was mainly effected by sale and not by slaughter, and in spite of the existing Order an exceptional number of diseased, though apparently glandered, horses must have changed hands and formed new centres of infection during the last two years.

SWINE FEVER.

The following Table shows the number of reported outbreaks of this disease during each of the last six years :—

Year				Outbreaks
1905	...	...	...	817
1906	...	...	...	1,280
1907	...	...	...	2,336
1908	...	...	...	2,067
1909	...	...	...	1,650
1910	...	...	...	1,598

The figures for the past year are satisfactory in the sense that they indicate that the disease was less prevalent than during the immediately preceding one, but the comparatively small reduction in the number of outbreaks as compared with that year is disappointing. The probable reasons for the comparative failure of the efforts hitherto made to stamp out the disease have been pointed out in previous annual reports and need not be repeated, more especially as the subject is at present under inquiry by a special Departmental Committee appointed by the Board of Agriculture.

FOOT-AND-MOUTH DISEASE.

The occurrence of cases of foot-and-mouth disease in Yorkshire during the past year serves as an unpleasant reminder that certainty of freedom from this disease is practically unattainable as long as it exists in any of the countries of Western Europe. A necessary consequence of the fact that few outbreaks have occurred in this country during the last twenty-five years is that at the present day comparatively few farmers have a first-hand knowledge of the disease, and on that account there is always a great danger that when it happens to be introduced the true nature of the disease may not be recognised until the infection has been carried to a number of different centres. Fortunately in the outbreak which occurred in July last the disease was reported and definitely diagnosed before the infection had been carried to any great distance, though not before it had attacked ten cattle and a pig. The Board of Agriculture very wisely determined to employ stamping-out measures, and caused the whole of the animals on the farm (twenty-six cattle, ninety-four

sheep, and three swine) to be slaughtered. Three cows and three calves, which had recently been moved off the farm, were followed up and also slaughtered, although they appeared to be healthy. About a week later the disease was detected in a field on the adjoining farm, and in that case also the whole of the animals on the place (thirty-five cattle and 107 sheep) were promptly slaughtered. It is eminently satisfactory that at a comparatively trifling cost the country was thereby saved from what might have proved a widespread outbreak.

As in nearly all the fresh outbreaks since the disease disappeared in 1886, the precise manner in which the virus was introduced in July last could not be traced. In this case no suspicion attached to any article of diet, but there can hardly be a doubt that infective material from the scene of an outbreak on the Continent of Europe must have been brought to some British port and carried thence to the farm in Yorkshire.

It is very much to be desired that British farmers, and especially those in the eastern counties, should possess such a knowledge of the symptoms of the disease as will enable them promptly to recognise or suspect it should an outbreak occur among their animals. The symptoms in cattle which are of outstanding importance are lameness combined with slaver-ing at the mouth. Even when only one animal is affected this combination of symptoms should always awaken a suspicion of foot-and-mouth disease, and when two or more animals are thus affected at the same time or in quick succession the facts ought to be reported to the police without delay.

EPIZOOTIC ABORTION IN CATTLE.

In 1905 a Departmental Committee was appointed by the President of the Board of Agriculture and Fisheries to inquire by means of experimental investigation or otherwise into the pathology and etiology of epizootic abortion, and to consider whether any and, if any, what preventive and remedial measures might with advantage be adopted with respect to the disease. Subsequently the reference to the Committee was extended so as to include an inquiry as to the administrative procedure which, in view of the results of the investigation made by the Committee, should be taken to deal with cases of the disease and to prevent the spread of infection.

The Committee have published two reports, the first of which is devoted to a detailed account of the experimental part of the investigation conducted with a view to determining what is the actual cause of epizootic abortion in Great Britain, while the second contains the conclusions of the Committee with regard to the advisability of dealing with epizootic abortion of

cattle under the Diseases of Animals Acts, in view of the ascertained facts concerning the pathology of the disease and the information laid before the Committee by representatives of cattle breeding and dairying in Great Britain.

The principal facts determined by the Committee concerning the causation of the disease may be summarised as follows.

The common, if not the exclusive, cause of multiple cases of abortion occurring in the same herd in Great Britain is a very minute bacillus—the bacillus of cattle abortion. This organism is identical with the one which Professor Bang had previously proved to be the cause of epizootic abortion of cattle in Denmark.

The organism in question has very distinctive characters, both in respect of its morphology and the appearance presented by its cultures in artificial media. By these characters it can be distinguished from any other organism at present known to bacteriologists. Unlike many other bacteria, it is not very easily cultivated outside the body, and this fact lends strong support to the view that in nature it never multiplies except in infected animals. Although multiple cases of abortion occur in other species than the bovine one, the organism in question has never been encountered in any other animals except pregnant cows. Experiments conducted by the Committee showed that the organism has a wide range of pathogenic power and is capable of causing abortion when experimentally introduced into pregnant animals belonging to several different species, but there is at present no evidence to show that in natural cases it ever is the cause of abortion in other animals than cows.

Although the disease for which the organism is responsible is termed epizootic abortion, the real disease is an inflammation of the pregnant womb and of the membranes which surround the foetus; and the act of abortion, when it occurs, is merely a symptom of this inflammation of the womb. In infected cows killed before the act of abortion the bacillus is usually found in immense numbers, chiefly between the womb and foetal membranes, but in a considerable proportion of cases it is also present in small numbers in the body of the foetus itself, and especially in the stomach contents.

It was at one time very generally believed that the common method by which the disease was naturally spread was the introduction into the genital passages of the cow of infective material which had escaped from a previously affected animal, such introduction usually taking place by contact of the hind parts of the cow with the contaminated floor of a cow-shed. The Committee found that the most certain method of experimental infection was the direct injection of bacilli into the

blood stream of a pregnant cow, but no great interest attaches to such an entirely non-natural method of infection. Much more important is the fact that the administration of infective material by the mouth determined infection of pregnant cows in three out of four experiments. Indeed the experiments indicated that the chances of successful infection are somewhat greater when the bacilli are introduced into the alimentary canal than when they are directly introduced into the genital passages. Having regard to all the circumstances, it therefore appears to be reasonable to conclude that by far the commonest method of natural infection in a cow-shed is the ingestion of bacilli which have escaped from the body of a previously diseased animal. It would not be justifiable to deny that infection may sometimes be brought about through the accidental introduction of infective material direct into the genital passages while the cow is lying down, but it appears to be more than likely that that method of infection is of quite secondary importance as compared with infection by the mouth.

It is now possible to understand the futility of attempting to check the spread of the disease in an infected cow-shed by disinfection of the external genitals and hind quarters of the healthy animals. One must now reckon with the fact that when a herd of pregnant cows contains one or more infected animals no amount of trouble taken to disinfect the hind quarters of the healthy animals can be expected to check the spread of the disease, though frequent cleansing and disinfection of the floor of the cow-shed may help in that direction.

The Committee in their first report also discuss the possible rôle of the bull in the transmission of the disease, and, while not denying that a bull may mechanically transfer the bacilli from a diseased to a healthy cow when the two different services are separated by only a slight interval, they incline to the view that this also is an exceptional method of infection.

The further researches of the Committee were devoted to ascertaining (1) the most reliable methods of diagnosing the disease, and (2) the possibility of immunising healthy animals against infection.

The observations made by the Committee show that it is a comparatively easy matter to determine whether any given case is one of epizootic abortion when material for examination can be obtained at the time of abortion or within a day or two afterwards. When one has the opportunity to stand by at the act of abortion in a case of the contagious disease, there is never any difficulty in finding and identifying the specific bacilli, either in the discharge which comes away at the moment, or in the substance of the foetal membranes, or in the body of the

foetus itself. Similarly, the bacteria can generally be detected by microscopic examination of the vaginal discharge for a few days after the act of abortion. It need hardly be pointed out that it was of fundamental importance to determine whether in practice it would actually be possible to distinguish between cases of contagious abortion and premature calving resulting from some other cause than infection with this particular microbe.

Equal importance attaches to the Committee's investigations touching the possibility of making a correct diagnosis while the disease is still in the latent condition, that is to say, the possibility of determining whether a pregnant cow suspected in consequence of having been exposed to contagion is actually infected or not. In this direction also the researches of the Committee were of a reassuring character, and although the result of a larger number of experiments must be awaited, there is reason to hope that by the application of definite tests it may be possible to enter an infected herd and separate out the animals already infected, just as the tuberculin test enables one to do in the case of a tuberculous herd.

Assuming that the possibility of making an accurate diagnosis during the latent stage of the disease should thus be proved, it is obvious that the owner of an infected herd will in future be placed in a much more favourable position than before for dealing with an outbreak. Meanwhile, however, one has to reckon with the fact that the disease is already prevalent throughout the length and breadth of the land, and that it is frequently being carried into previously healthy herds by the deliberate or careless sale of diseased cows. It is not unlikely that the disease is often so introduced by the purchase of a pregnant cow in the latent stage of the disease, and in other cases the mischief is worked by a cow which has aborted while in the possession of her last owner.

It is obvious that if any attempt is to be made to check the spread of the disease by administrative measures, it must in the first place be made notifiable under an Order of the Board of Agriculture, and, following upon that, the sale of cows that have aborted from the contagious disease must for a period afterwards be forbidden. These may be regarded as the minimum requirements, but it must be confessed that even if they were generally enforced over a long period they could not be expected to eradicate the disease, because there would still remain the danger attaching to the sale from infected herds of pregnant cows infected with the disease in the latent stage.

Although as an outcome of their researches regarding the pathology of the disease the Departmental Committee were

not in any doubt as to the measures of an administrative character that would be most effective for preventing its spread, they thought it advisable in the first place to ascertain whether the enforcement of such measures would have the approval and support of those whose interests are most directly concerned.

With the object of obtaining information with regard to that point all the principal societies representative of cattle breeding and dairying in Great Britain were invited to appoint one or more of their members to give evidence, and in response to this appeal eighteen witnesses appointed by fifteen different societies laid their views before the Committee.

Without any exception these witnesses were agreed as to the gravity of the present position, and nearly all of them placed a very high estimate on the loss which contagious abortion is at present causing to those engaged in cattle breeding and dairying. It is of interest to note that the majority of the witnesses were of opinion that the contagious nature of the disease is now very generally recognised by stock-owners, although they testified to the fact that it is a very common practice to put on the market cows that have recently aborted. In fact it would appear that this practice is not so much the result of ignorance as of conviction on the part of the owner that the disease is contagious and that it is therefore well to get rid at the earliest possible moment of a cow that has aborted.

With scarcely an exception the witnesses expressed themselves as strongly in favour of compulsory notification of abortion and premature calving, and they were all agreed that a stop should be put to the practice of selling cows that have recently aborted. On the other hand, some difference of opinion was expressed as to the advisability of placing restrictions on cows that have been exposed to contagion, although the majority considered that some restrictions of that kind ought to be imposed. Only one witness believed that the members of the society which he represented would object to any interference whatever with pregnant animals known to have been exposed to the risk of contagion.

Reviewing the whole of the evidence, both that obtained by their experimental researches carried out during the last four years and that laid before them by the representatives of the different societies, the Committee felt that the time had not arrived for the introduction of drastic measures aiming at the early eradication of the disease. They admit that such measures would have to include the placing of restrictions on the pregnant animals known to have been exposed to risk of infection as well as on the cows which have actually aborted,

but at present they favour the admittedly less effective plan of placing restrictions only on the sale and movement of cows that have aborted.

The Committee accordingly recommend that, as a preliminary measure, epizootic abortion in cattle should be dealt with under an Order of the Board of Agriculture and Fisheries, requiring—

- (1) Compulsory notification of suspected cases of the disease.
- (2) Veterinary inquiry to establish the existence of disease on any particular premises; and
- (3) Temporary isolation and restrictions on the movement of any cow that has recently aborted.

The Committee believe that compulsory notification and enforced temporary isolation of cows that have aborted would be viewed with approval by the majority of stock-owners. It is to be hoped that this estimate of the prevailing opinion among those whose interests are most directly concerned may prove to be correct. It is scarcely credible that the general feeling of stock-owners can be in favour of allowing the present unrestricted sale of known infected cows to continue, and if any action whatever of an administrative kind is to be taken the measures recommended by the Departmental Committee would appear to be the least drastic that could be expected to yield any useful results.

JOHN MCFADYNEAN.

Royal Veterinary College,
London, N W

ANNUAL REPORT FOR 1910 OF THE CONSULTING CHEMIST.

THE increase reported last year in the number of samples sent by Members for analysis has been maintained, the total for the twelve months being 480, as against 485 in 1909. In addition, there were 146 samples of milk and 44 samples of cider and perry analysed in connection with the Society's Country Show at Liverpool.

The principal feature marking the year has been the high price of certain feeding stuffs, more particularly linseed cake and cotton cake. Thus, the price of linseed cake has risen to 10% and over, while that of Egyptian cotton cake has frequently exceeded 6% a ton.

It would appear that Bombay cotton cake has hardly been in as much favour as previously, and there has been no marked increase in the extent to which Soya bean cake has been used.

The price of the latter has somewhat increased, and there would seem to be also a certain reluctance on the part of stock-owners in feeding with it.

There has not been any new material introduced, either in the case of feeding stuffs or of fertilisers, which is of any particular importance, but renewed attention has been drawn to the cultivation of sugar beet and the manufacture of beet sugar.

Though no new form of adulteration has been brought to light, there has been abundant evidence of the need of continued watchfulness.

The private circulars issued to Members of the Society have borne testimony to this. The cases published in these include :—

- (1) Middlings adulterated with rice husk.
- (2) Barley meal containing husks of barley and oat, with weed seeds.
- (3) Sharps containing weed seeds and excessive sand.
- (4) "Bombay" cotton cake sold as "Egyptian."
- (5) Compound manure sold as "Pure Dissolved Bones."
- (6) "Round Oil Feeding Cake" with excessive sand.

The last two cases deserve special attention; in (5) the material sold under the name of "Pure Dissolved Bones" was supplied by a Farmers' Co-operative Society, and it would appear that one cannot rely even upon organisations designed specially to protect the farmer. In (6) the cake in question was one to which attention had been drawn on several previous occasions in the Reports of the Chemical Committee.

It is satisfactory to note that the adulteration of offals, though it has not altogether ceased, has been less prevalent than previously.

The Annual Report for 1909 of the working of the Fertilisers and Feeding Stuffs Act shows that, in England, 2,512 samples were examined as against 2,314 in 1908. Of these, 584 only were "formal" samples. Thirty-eight cases of breach, or suspected breach, of the Act were reported, but in only four of these was any conviction obtained.

The unsatisfactoriness of the working of the Act has been more and more made prominent, and the Council of the Royal Agricultural Society have again drawn attention to the urgent need of amendment of the Act.

By way of comparison, reference may be made here to the Canadian Fertilisers Act of 1909, which is a far simpler and more workable one than our English Act. It is comprised in five small pages, and the regulations with regard to sampling

occupy thirteen lines only, and yet are quite enough for the purpose, and avoid the minutiae of procedure which form such a stumbling block in the carrying out of the English Act.

I have had occasion to draw the attention of the Board of Agriculture to the practice, sometimes indulged in, of mixing Bombay cotton seed with Egyptian, and to the sale of the manufactured cake under the name of "Pure Cotton Cake," without any qualification. Similarly, it is frequently the practice now to invoice both Egyptian and Bombay cotton cake as "Pure Cotton Cake." Inasmuch as the difference in price between the two classes of cake is considerable, it seems to me very desirable that it should be incumbent to state on the invoice whether the cake is made from Egyptian seed, from Bombay seed, or from a mixture of the two. It would appear, however, that, under the present Act, nothing can be done, and I can only advise purchasers of Egyptian cotton cake to be careful to have the words "made from Egyptian cotton seed only" inserted on the invoice.

I now give, as usual, under the different headings, the most prominent matters which have been brought to my notice during the year.

A. FEEDING STUFFS.

1. *Linseed Cake.*

The price of this cake has risen greatly, and this has sometimes made its use almost prohibitive. At the same time the cakes that have passed through my hands have been, as a rule, very pure and good.

The following is an instance of a pure and clean cake which was guaranteed to contain 9 per cent of oil and 29 per cent. of albuminoids:—

Moisture	12·68
Oil	10·62
¹ Albuminous compounds	29·75
Mucilage, fibre, &c.	41·91
² Mineral matter (ash)	5·04
	<hr/>
	100·00

¹ Containing nitrogen	4·76
--	------

² Including sand	·30
---------------------------------------	-----

The price of this was, in October, 1910, 97. 2s. 6d. per ton delivered, which must be called decidedly cheap under the then conditions.

2. *Cotton Cake.*

I have on several occasions noticed that Egyptian cotton cake has been very hard. Such a cake is represented by the

sample "A" in the accompanying table. The cake was quite genuine, but was exceptionally hard, though the percentage of moisture is high rather than otherwise.

	A Egyptian	B Bombay	C Bombay
Moisture	13·07	10·37	11·44
Oil	4·98	4·29	4·73
¹ Albuminous compounds	22·31	19·81	19·94
Mucilage, fibre, &c.	53·86	59·75	57·20
¹ Mineral matter (ash)	5·78	5·78	6·69
	<hr/> 100·00	<hr/> 100·00	<hr/> 100·00
¹ Containing nitrogen	3·57	3·17	3·19
² Including sand	·29	·84	1·44

Bombay cotton cake has hardly been as good as previously, and the occurrence of sand in excess is still frequent.

"B" was a "Bombay" cotton cake which cost, in January, 1910, 5*l.* 6*s.* 3*d.* per ton. The purchaser complained of it being very hard and tough, and that he had difficulty in getting his cattle to eat it. Though sold as "Best Bombay," it was very far from this, and was, indeed, an exceptionally woolly and hard cake.

"C" cost 5*l.* 17*s.* 6*d.* per ton delivered. It contained excessive sand, and must be reckoned decidedly dear.

3. Soya Bean Cake.

The number of samples of this cake examined has not been large, but the samples have, as a rule, been found to be quite pure.

In one case where Soya beans themselves were used and ground up at the farm, a sample sent me for analysis showed 17·88 per cent. of oil.

4. Compound Cakes and Meals.

These have, as usual, been of very variable nature. The following is an analysis of the cake previously referred to as containing excessive sand. It was sold under the name of "Round Oil Feeding Cake."

Moisture	13·14
Oil	5·56
¹ Albuminous compounds	11·06
Starch, fibre, &c.	62·05
² Mineral matter (ash)	8·19
	<hr/> 100·00
¹ Containing nitrogen	1·77
² Including sand and silica	4·44

A member sent me for examination some hard lumps which he had noticed in a dairy meal. These I found to be of two kinds; one was "Bombay" cotton cake, and the other was composed of "Kurdee" or safflower cake.

It is clear that such lumps as these should not exist in feeding materials sold under the name of "meal."

5. *Offals.*

(a) Sharps.

(b) Rice Shudes.

(a) *Sharps*.—There has been a general improvement in the quality of this and similar materials. At the same time, adulteration of them has by no means ceased. The following is an analysis of sharps which contained excessive sandy matter :—

Moisture	12.48
Oil	3.93
¹ Albuminous compounds	14.12
Starch, fibre, &c.	61.59
² Mineral matter (ash)	7.88
	<hr/>
	100.00

¹Containing nitrogen 2.26

²Including siliceous matter 3.94

(b) *Rice Shudes*.—A sample of rice shudes, costing 48s. 6d. per ton delivered, was sent me for analysis, and gave the following figures :—

Percentage of—

Oil . . . . .	.83
Albuminoids	2.19
¹ Mineral matter (ash)	17.19
² including silica	15.74

This was a material having little or no feeding value, and must be reckoned as very dear.

6. *Sugar Beet.*

A number of samples of sugar beet grown in this country have been sent me for analysis.

The percentage of sugar obtained in the roots has, as a rule, been distinctly good, as shown by the following analyses :—

	A	B	C
Percentage of sugar in roots	15.20	18.13	16.14

"A" was grown in Shropshire, the variety being "Garton's White Sugar Beet." The produce per acre was 18½ tons of roots, and the seed was sown on ridges twenty-four inches apart.

7. Mangolds.

In four different varieties sent me for determination of the amount of sugar, the following results were obtained :—

Percentage of—	A	B	C	D
Water	88.57	87.09	88.97	87.93
Solid matter	11.43	12.91	11.03	12.07
Crude fibre	2.63	3.12	2.72	2.87
Sugar in whole roots.	6.84	9.19	7.26	8.36

B. FERTILISERS.

1. Basic Slag.

Though generally found to be up to quality, there have been occasions in which basic slag has been shown to be distinctly deficient. Such are the following :—

Percentage of—	A	B
Phosphoric acid	13.09	10.16
equal to tribasic phosphate of lime .	28.60	22.20
Phosphoric acid soluble in 2% solution of citric acid	6.59	
equal to tribasic phosphate of lime	14.40	
Fineness	70.00	70.00

“A” was guaranteed to contain 28 per cent. of phosphates and to be of 80 per cent. solubility in citric acid, with a fineness of grinding of 80 per cent. The solubility in citric acid amounted to only 50.35 per cent., and the fineness was 10 per cent. below the guarantee.

“B” was guaranteed to contain 26 per cent. of phosphates and to be of 80 per cent. fineness. In both respects it was deficient.

2. Dissolved Bones.

Moisture	15.61
¹ Organic matter and water of combination	25.56
Monobasic phosphate of lime	8.57
equal to tribasic phosphate of lime (bone phosphate) rendered soluble by acid	(13.42)
Insoluble phosphates	8.84
Sulphate of lime, alkaline salts, &c.	47.04
Insoluble siliceous matter	2.38
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	1.37
equal to ammonia	1.66

This is a case to which reference has already been made. The manure, one which was really nothing more than a mixed

manure, was sold by a Co-operative society as "Pure Dissolved Bones."

It had been guaranteed to contain soluble phosphate 11 per cent., insoluble phosphate 19 per cent., and ammonia 3 per cent., and the price was 4*l.* 11*s.* per ton. An error was admitted, and, in the end, an allowance of 2*l.* per ton was made.

3. *Fish Guano.*

Under this name was sent me a material which cost 75*s.* per ton, and which gave the following analysis:—

Moisture	18 73
¹ Organic matter	25·32
Phosphate of lime	7·54
Alkalies, &c.	20·74
Insoluble siliceous matter	27·67
	<hr/>
	100·00
¹ Containing nitrogen	1·22
equal to ammonia	1·48

This was nothing but a refuse material much like slaughter-house refuse, and the price was quite twice as high as the worth of the material.

4. *Chicken Manure.*

The following are two analyses of this material:—

	A	B
Moisture	16·49	55·05
¹ Organic matter	32·33	21·30
Phosphate of lime	4·41	2·67
Alkalies, &c.	·93	3·17
Siliceous matter	45·84	17·81
	<hr/>	<hr/>
	100·00	100·00
¹ Containing nitrogen	1·98	1·25
equal to ammonia	2·40	1·51

"A" cost 40*s.* per ton, and it will be seen that nearly half of it was earthy matter. I should consider that it was worth nothing like the price paid.

"B" was a second sample of the same, but with considerably less earthy matter than "A" had. It was, however, very lumpy and wet, and was, on the whole, of inferior value to "A."

5. Scrapings of Skins.

Moisture	49.72
¹ Organic matter	15.86
Phosphate of lime	1.08
Carbonate and sulphate of lime, &c.	27.82
Sand	5.52
	<hr/>
	100.00
¹ Containing nitrogen	1.39
equal to ammonia	1.69

This material cost 35s. per ton, but was very moist and in lumpy condition; so that, considering the difficulty of applying it, it would have to be regarded as decidedly dear at 35s. per ton, the price at which it was offered.

6. Refuse Manure.

Moisture	4.69
¹ Organic matter	68.59
Phosphate of lime	23.32
Alkalies, &c.	3.15
Sand	2.5
	<hr/>
	100.00
¹ Containing nitrogen	7.67
equal to ammonia	9.31

The above is the analysis of a manure made from the condemned carcasses of meat found on the London markets. This, it will be noticed, was of a distinctly rich nature, and its condition, moreover, was very satisfactory.

7. Tannery Refuse.

Moisture	42.60
¹ Organic matter	13.35
¹ Phosphoric acid . . . . .	.41
Lime	17.16
Magnesia, oxide of iron, alumina, carbonic acid, &c.	15.83
Insoluble siliceous matter	10.65
	<hr/>
	100.00
¹ Containing nitrogen . . . . .	.35
equal to ammonia . . . . .	.41
² equal to phosphate of lime . . . . .	.89

Where the above is obtainable for a few shillings per ton, it is quite worth getting, when near at hand, and especially when lime is required on the land.

8. *Nitrate of Lime.*

A sample of this sent to me gave the following results :—

Percentage of—

Lime	26.85
Nitrogen	13.38
equal to ammonia	16.25

The price of this was 9*l.* 7*s.* 6*d.* per ton. It was genuine, but was found to be decidedly lumpy and moist.

9. *Soot.*

The variable quality of this material has often been mentioned. A sample sent me for analysis gave :—

Percentage of—

Nitrogen	2.03
equal to ammonia	2.46
Sand	24.64

The price of this was 44*s.* per ton. Quite one-quarter was useless matter, and the price was far too high. A good sample of soot should yield fully 4 per cent. of ammonia.

10. *Salt.*

(a) Salt from Fish Curing.

(b) Salt from Skin Curing.

Analyses of the above were as follows :—

Moisture	8.53	5.01
¹ Organic matter	5.25	2.33
Phosphate of lime . . . . .	.44	.14
Chloride of sodium, &c.	85.64	92.12
Sand . . . . .	.14	.40
	<hr/> 100.00	<hr/> 100.00
¹ Containing nitrogen . . . . .	.13	.23
equal to ammonia . . . . .	.16	.28

It has often been maintained that salt which has been used for such manufacturing purposes as the above has thereby derived considerable value.

The above analyses, while indicating that in both cases there has been a small addition of nitrogen and of phosphates,

yet do not indicate any material addition of manurial value above that possessed by the salt itself.

11. *Ground Lime.*

Lime	55.22
Oxide of iron and alumina	7.52
Silica	4.59
Magnesia, carbonic acid, &c.	32.67
	<hr/> 100.00 <hr/>

This was an imperfectly burnt sample of lime, and, in addition, was of low quality. It cost 16s. per ton delivered. It was also far from being well ground, and must be considered decidedly dear.

C. MISCELLANEOUS.

1. (a) *Soil Needing Lime.*

(b) *Soil under Elliot's System of Laying-down Grass.*

(a) A sample of soil was sent me for analysis from the Midlands. The farmer complained that the wheat sown on it turned brown and rusty, and gradually died off in spite of the fact that he had treated it liberally with farmyard manure. Clover, similarly, was said to have died out, and to have become very full of sorrel.

The analysis of the soil gave the following results :—

(Soil dried at 100° C.)

Organic matter and loss on heating	4.44
Lime . . . . .	.13
Oxide of iron, &c.	4.58
Insoluble siliceous matter	90.85
	<hr/> 100.00 <hr/>

It is clear that the cause of the infertility of the land is its great deficiency in lime, and that nothing but liming will effect the improvement desired.

(b) A Member of the Society who had tried Mr. R. H. Elliot's system of laying-down land to grass, as adopted at Clifton Park, Kelso, sent me two samples of soil for analysis. On the former of these, "A," Elliot's system had been adopted, and on "B" an ordinary grass-seed mixture had been sown, to which basic slag had been given in addition. The sender wished to see whether there was any difference shown in the soil as between the two systems pursued. The following are the respective analyses :—

(Soils dried at 100° C.)	A (Elliot's system)	B (Ordinary system)
Organic matter and loss on heating	10.46	9.53
Oxide of iron	6.78	7.23
Alumina	7.25	7.07
Lime . . . . .	.23	.17
Magnesia . . . . .	.39	.30
Potash . . . . .	.41	.36
Soda . . . . .	.23	.24
Phosphoric acid . . . . .	.43	.38
Sulphuric acid . . . . .	.10	.12
Insoluble siliceous matter	73.72	74.60
	<hr/> 100.00	<hr/> 100.00
Nitrogen . . . . .	.347	.309

It will be noticed that the soil "A" contained alike more organic matter and nitrogen than "B," while it also had rather more lime, potash, and phosphoric acid. So that, presuming the soils to have been originally alike, it would certainly appear that an improvement had been effected under the system of laying-down grass advocated by Mr. Elliot.

2. Water.

Green growth on water in reservoir.

A Member of the Society complained of trouble which was experienced with the water supply of a large mansion.

The water came from a spring far away from any pollution, and was carried down to an open concreted reservoir. At certain times of the year the water from the reservoir was noticed to have a peculiar taste, and also a regular growth was found to form on the bottom of the reservoir and gradually to float up to the surface. Some of this floating matter was sent me, and, through the kindness of the authorities at Kew Gardens and of Professor Biffen, the Botanist to the Society, was identified as being *Phormidium laminosum* Gom.—one of the blue-green algae (*Cyanophyceæ*).

Experiments were made on using sulphate of copper in the water for the purpose of destroying the alga, and the alga was found to be killed by the sulphate of copper when used at the rate of one part to five million parts of water.

The following is a list of samples analysed on behalf of Members of the Society during the twelve months December 1, 1909, to November 30, 1910 :—

Linseed cakes	22
Uncorticated cotton cakes	36
Decorticated cotton cakes	12
Compound feeding cakes and meals	50

Cereals	23
Rice meals	2
Bean meals	3
Dried grains	3
Superphosphates	20
Dissolved bones	10
Compound manures	13
Raw and steamed bones	14
Peruvian guanos	13
Fish, meat, and bone guanos	7
Basic slag	20
Nitrate of soda	3
Sulphate of ammonia	5
Potash salts	7
Shoddy	22
Refuse manures	3
Lime	6
Soot	1
Roots	10
Hops	4
Waters	85
Soils	28
Milk, cream, and butter	31
Miscellaneous	27
Total	480

J. AUGUSTUS VOELCKER.

22 Tudor Street,
London, E.C.

ANNUAL REPORT FOR 1910 OF THE BOTANIST.

IN the following Report a short account is given of the work carried out between January 1 and November 30, 1910, on behalf of the Members of the Society by the Botanist.

Some 360 inquiries in all were received. The majority of these were concerned with the purity and germinating capacity of agricultural seeds. The remainder ranged over a wide area but provided little of general interest. They are not sufficiently numerous to afford any accurate survey of the general condition of any one branch of the subject during the year 1910. Consequently no attempt has been made to summarise the results of the inquiries in any considerable detail, and I have had to content myself with a brief description of the work carried out in the more important sections, adding occasionally notes which may be of service to Members.

It is satisfactory to be able to report, that after so bad a seed-harvest as that of 1909, the majority of the seed samples

tested for Members were little, if at all, inferior to those of better seasons.

The samples of the seeds of natural grasses were in almost every case as good as one could wish for, both from the point of view of germination and purity. Foreign-grown clovers also germinated well, and only 4 per cent. of the samples contained seeds of dodder. The English-grown crop, judging from the few samples received, was equal to the foreign-grown in its germinating capacity, though as the seed aged its value fell off rapidly.

The cereals received for testing did not show such satisfactory results. This was, in all probability, due to the fact that the grain in most cases was home-grown and home-cleaned, and the senders, recognising its deficiencies, merely required to know how much extra should be planted in order to secure a full plant. Oats proved to be especially bad, the average germinating capacity of the samples tested being only 62 per cent. An explanation of the fact is almost certainly to be found in the partial failure of the crop in 1909 brought about by the attacks of the frit-fly.

At the same time two excessively bad samples of the French variety of wheat grown in England and purchased as seed corn, were sent for testing in each case after a complete failure to obtain a plant. With one of the samples a report was sent that 90 per cent. of the grain must have failed to grow. Germination tests confirmed this result.

The most unsatisfactory seeds examined were those of the 1909 mangold seed crop. Most of the samples contained large percentages of immature seeds in which the embryos had failed to develop completely. Even where the seed was large and sound the germinating capacity fell off rapidly whilst the seed was in store. One sample known to produce 170 plants per 100 grains when harvested only gave 80 plants per 100 at sowing time, and in tests made in August this value had fallen to about 50 plants per 100. This rapid failure of the seeds was more pronounced than usual this season. In view of its occurrence, Members purchasing seed should require a guarantee of the germinating capacity at the time of delivery instead of the original value which is generally quoted. Further seeds to be tested should be sent to the Botanist at the earliest opportunity, not, as one Member sent them, after they had been decaying in the soil for a month.

FUNGOID DISEASES OF PLANTS.

The majority of the diseases sent for determination were, naturally, those due to the common fungoid parasites. Rust, smut, and finger-and-toe provided the bulk of the inquiries.

A few of the more interesting are described below, with, where practicable, methods for dealing with them.

Silver-leaf on Black Currant.—This disease is met with very commonly on various kinds of plums, particularly the Victoria plum. It occurs occasionally on apples, and has been reported lately on gooseberries. Its presence is recognised with certainty by the characteristic silvery appearance of the foliage. The silvering may be found on isolated branches, or the whole of the leaves may be affected. As a rule the trees die gradually, and on the dead branches and trunks the fruiting stage of the fungus *Stereum purpureum* may occasionally be met with.

It has been suggested that a cure may be effected by introducing a solution of ferrous sulphate into bore holes in the trunks. The method does not give satisfactory results, and the best course is to remove infected trees as speedily and as thoroughly as possible and destroy them by burning.

Gooseberries.—A few specimens supposed to be attacked by the American gooseberry mildew were sent for examination. In one of these the foliage was attacked by the European mildew (*Microsp hæra grossulariæ*); in the others the effects of the American mildew were approximately simulated by the attacks of aphids.

The disease is now generally distributed in this country, and in view of its importance members are advised to take steps to eradicate it if it should appear amongst their plantations.

In the early stages of the attack, soon after the foliage is fully expanded, the young tips of the twigs become covered with a white coating of the fungus, from which myriads of spores capable of spreading the disease are produced. At this stage spraying with a dilute solution of liver of sulphur containing one half of an ounce to a gallon of water, if repeated at fortnightly intervals, will do much to suppress the disease. As the season advances the white coating becomes a rich brown colour, and at this stage a crop of resting spores is produced. Twigs showing this symptom should be pruned off and burnt, as then the majority of the resting spores will be destroyed. It does not appear to be advisable to prune before the middle of August. If the operation is carried out earlier, buds, which would normally remain dormant, break and give rise to rapidly-grown, succulent wood, which is very readily infected. Pruning, however, should not be delayed beyond the end of August, for cases have been met with recently where the fungus has attacked the foliage as well as the twigs and berries. If such infected leaves are allowed to fall to the ground a crop of resting spores is allowed to

remain over the winter ready to form a fresh centre of infection in the following spring.

Sainfoin.—One Member, while sending specimens of this plant, reported a gradual failure of the crop. On examination black resting bodies (sclerotia) of one of the Sclerotinias were found just below the crown of the plant. They probably belonged to a fungus very similar, if not identical, with that responsible for clover-sickness. There should be no difficulty in dealing with this parasite if the starving-out method used for the latter disease is adopted, for it is unlikely that the resting bodies can remain in a living condition in the soil for more than four years.

Swedes.—Two lots of swedes attacked by a bacterium *Pseudomonas destructans* were received from Members of the Society in the south and south-west of the country. The disease, though common in the north of England, does not appear to be at all abundant in other parts. The infected roots become hollow, the process generally starting at the crown. In the early stages of decay the rotten portions teem with bacteria. Though attacked in this fashion the roots often continue to grow, becoming ultimately cup-like shells, containing a foul-smelling pulp, with their edges covered with small foliage leaves. Where the disease occurs the further cultivation of swedes in the same fields should be postponed as long as possible. A dressing of lime, after the removal of the crop, would probably prove beneficial.

Potatoes.—One case of "corky-scab" of potatoes was met with in Cambridgeshire. The disease is said to be rampant in the west of Ireland, and in view of the extended use of Irish seed potatoes, some account of it is given below. Fuller particulars may be found in the *Journal of the Board of Agriculture*, Vol. XV., page 592. The tubers when first attacked show small, slightly-raised and dark-coloured patches which are often crowded together in clusters instead of being more or less uniformly distributed over the surface as is the case with other scab diseases. As the attack progresses the patches become roughened and masses of brown-coloured spores are extruded from them. The diseased areas are often completely isolated from the sounder parts of the tuber by the formation of cork layers. Consequently the potatoes do not as a rule show any further signs of decay, and though their rough scabby exterior may make them unsaleable for food, they can still be used for seed purposes. Such tubers should on no account, however, be used for seed, for the planter runs not only the risk of raising a "scabby" crop from them, but the further risk of having to keep his fields free from potatoes until the fungus can be starved out of them.

Fruit Trees.—A small number of inquiries were received with regard to the commoner diseases of fruit trees. These included six cases of peach curl (*Exoascus deformans*), apple canker (*Nectria ditissima*), brown rot of apples and plums (*Monilia fructigena*), and the apple scab (*Fusicladium dendriticum*).

Two obscure diseases, due in all probability to parasitic fungi, are still under investigation. One, in the mangold, is characterised by an almost complete separation of the rings from one another, though otherwise no great damage is done to the tissues of the root; the other attacks the rhizomes of seedling asparagus plants and rapidly kills them.

During the course of the year nearly thirty inquiries with regard to weeds were dealt with. Few of these were of any general interest. One exceptional case is possibly worthy of mention in which the somewhat rare hoary cress (*Lepidium draba*) had obtained a footing on arable land and spread to such an extent as to become a nuisance. The plant is a deeply-rooted perennial which seeds freely and can, under suitable conditions, thrive in hedgerows or even in open pastures. I understand that steps were promptly taken to exterminate it by hand-pulling.

Some twenty inquiries on the subject of the formation of permanent pastures were made in the course of the year. Considerable aid was afforded in several cases by Members forwarding samples of the herbage of neighbouring fields, and in one case actual turves, chosen, as far as possible, to be representative of the local grass flora. From a botanical analysis of these an excellent idea of the grasses flourishing under the same conditions could be obtained and prescriptions for the mixtures drawn up accordingly. I would suggest that Members requiring advice of this kind should adopt one of these plans, as it gives far more precise information than any description of the soils and local conditions can afford.

Apart from the various sections already mentioned, general information was asked for on a number of subjects, such as the respective yielding capacity of the staple varieties of barley; the quality of certain varieties of wheat and their suitability for special soils; and, following some sensational newspaper reports, the possibility of growing two wheat crops in a single season.

R. H. BIFFEN.

School of Agriculture,
Cambridge.

ANNUAL REPORT FOR 1910 OF THE ZOOLOGIST.

CONTENTS.

PARASITIC DISEASES OF	PAGE	ROOT AND GARDEN CROP	PAGE
ANIMALS—		PESTS	
Warble-fly, &c.	316	FRUIT PESTS	319
CORN CROP PESTS—		FOREST TREE PESTS	321
Frit-fly, &c.	318		

THE applications for information and advice received by the Zoologist during the past season were more numerous than in any previous year. As usual they covered a very wide field, and ranged from the simple identification of insect specimens to cases of injury to animals or crops involving a considerable amount of investigation and experiment. The general scope of the work of the department is indicated in the subjoined notes.

PARASITIC DISEASES OF ANIMALS.

Under this section advice has been given in connection with warble-fly, sheep maggots, intestinal worms in sheep, gapes in domestic fowls and in pheasants, coccidiosis in partridges, and a lung-worm (*Strongylus paradoxus*) in pigs. Various parasites, especially ticks and biting flies, have also been sent for identification.

Some of these diseases are more appropriate to the Veterinary Department, but concerning others a few notes may be given here.

With regard to the warble-fly two points emerge more clearly every year in consequence of the accumulation of experience and of the accurate experiments which have been recently made—especially by Professor G. H. Carpenter in Ireland. One is that, though some preparations for killing the maggots in the warble swellings are comparatively harmless and fairly effective, by far the best plan is to squeeze the maggots out. There is no need, moreover, to wait till the maggots are nearly mature, for with a little practice they may be squeezed out quite early in the spring, while still very small. The other point has proved less acceptable to cattle owners, but it is impossible to resist the evidence in its favour. Dressing the backs of cattle to keep off the fly is a waste of labour and material. We know now that the eggs are not laid on the back at all, but on the legs, and cattle which have been

thoroughly dressed daily have been found to have as many warbles the following spring as others kept untreated under precisely the same conditions. The contrary opinion is chiefly due to an unfair comparison between cows which have been dressed and yearlings which have remained untreated, but it is always the case, without any treatment at all, that yearlings are much more warbled than cows.

How the warble maggot gets into the skin—whether by the mouth or directly—is still not absolutely known. Professor Carpenter's animals, though muzzled so as to prevent them from licking themselves, still contracted warbles, but on devising a more effectual muzzle the number of warbles was reduced.

It is interesting to learn that the complete extermination of warble maggots in his cattle had a distinct effect in reducing the warble flies on the farm in the following season, even though no action had been taken by neighbouring cattle owners. Of course united action by all the cattle owners in the district would be necessary to bring the fly to the point of extermination.

Cases were reported of sheep infested by *Strongylus* worms in the stomach. The practical difficulty in treating such an attack arises from the fact that it is impossible to get any drug directly into the fourth stomach where the worms live, for it is only after rumination that food enters it, and much may happen to the dose before it arrives at the desired spot. This accounts for the varying results obtained in various cases. One case of *Strongylus* attack is worth recording, because the owner of the sheep, Mr. G. Fydeil Rowley, of St. Neots, tried a considerable variety of drugs with different lots of sheep, and was kind enough to communicate his results. Ground glass, an old-fashioned remedy, had no effect, and turpentine was "equally useless." Other drugs tried were :—

- a. { 1 dram sulphate of iron
 1 dram ground glass
- b. { 1 dram liquid perchloride of iron.
 1 dram sulphuric acid.
- c. { 30 grains sulphate of copper.
 5 grains of santonine.

The drug *c* had beneficial effects, and was thought to have saved the lives of a good many sheep. It was given enclosed in a gelatine capsule. For a lamb the dose was 20 grains sulphate of copper and 5 grains of santonine.

Among the worm parasites reported was a case of *Strongylus paradoxus* in the air passages of the lungs of pigs. There are two methods of treating such an attack, either by direct fumigation, or by doses of substances, such as turpentine and

camphor, which give off vapours which penetrate to the breathing organs. The latter treatment is seldom more than partially effective, and direct fumigation in a closed room is more likely to kill the worms. It is, however, very drastic and severe, and it is doubtful whether it is worth resorting to except in the case of valuable animals.

If a pig is seen to be affected by this disease it should be killed at once. If not, it should at least be isolated, and the sty disinfected.

CORN CROP PESTS.

Judging from the number of specimens received, frit-fly in oats was nothing like so prevalent as in the previous season. A certain number of cases of all the ordinary corn-crop pests were reported, but the one most often complained of was the wheat bulb-fly, which annually takes a considerable toll from the wheat crop, and against which no effective measures are known.

A practical agriculturist of wide experience recently told me that he had observed a rather curious fact, and it would be interesting to know whether others have had a like experience. He finds that he never has wheat bulb-fly if the land on which the wheat is was fully covered by a crop throughout the preceding August. He gives a very striking case in point. After a crop of potatoes of a variety which made comparatively little leafage and left broad bare spaces between the rows, the succeeding wheat crop was only affected by wheat bulb-fly in the rows which tallied exactly with the bare spaces of the previous year, the rest of the wheat being quite free. I have obtained no corroboration of this view from others, but it seems difficult to explain as an accident, and if it were generally true it would have a practical application to wheat-growing where the fly is prevalent. It seems useless to try to account for what after all may not be the general experience, but if true, the explanation would probably be found in the grasses which spring up on the uncovered land and attract the fly to lay its eggs among them.

In the case of corn pests it is seldom possible to do anything while the attack is on, and the destruction of the insects in the stubble and in the cavings after threshing does not suffice to prevent, though it may mitigate, a future attack. It is therefore important to note any conditions of culture which seem to discourage the particular insect in question, for there is no method of treatment so hopeful as a suitable rotation of crops.

ROOT AND GARDEN CROP PESTS.

Advice was given with regard to a variety of pests in this section, but they were mostly well known insects and call for

no special comment. Included in the list were surface caterpillars, root-fly maggots, turnip-gall weevil, mangold-fly, asparagus beetle, celery-fly, and also millipedes and eel-worms. Sporadic cases of attack by other pests came to hand, but they were in most instances of little importance. In one case of celery-fly attack the leaves of the plants were observed to be eaten away as well as blistered in the usual manner, and some caterpillars were found to be at work. On examination they proved to be very young caterpillars of a tiger moth, but their presence was probably quite accidental. It is chiefly in connection with crops of this group that a question of practical agriculture arises to which it is perhaps worth while calling attention. There are indications that pests are more frequently conveyed to crops by the medium of farmyard manure than was the case some years ago, and it has been suggested that the old plan of allowing the manure to "heat" thoroughly before use is less practised than formerly, the view being that valuable manurial matter is lost in the process of "heating." The result would naturally be that certain insects in the manure which were formerly killed by the heat evolved in fermentation would now survive and endanger the crops for which the manure was used. The practical agriculturist will be better able to judge if this change of practice is really taking place. If it is, it may be worth while considering whether such unfermented manure cannot be treated in some way before distribution so that the insects in it may be killed without any destruction of its nitrogenous elements.

FRUIT PESTS.

No new fruit pests have been reported, but advice has been given with regard to apple-sucker, apple-blossom weevil, pear midge, winter moth, gooseberry saw-fly, red spider, various aphidæ, mussel scale, raspberry bud-moth, and raspberry beetle.

Cases of unsuccessful banding for winter moth have been observed, and they have always proved to be due to two causes—too late banding, and insufficient attention to the bands, so that the preparation used upon them has been allowed to become dry. To be effective the banding should be completed not later than the first week in October, and the bands must be kept in such a condition that insects cannot walk over them. There is, of course, much to be said for those who, intending to spray in the spring, think that all caterpillars may as well be accounted for by that means alone and that banding is unnecessary; but there is nothing to be said in favour of banding late or inadequately. The expense is incurred and the object is not attained.

A bad attack of raspberry beetle (*Byturus tomentosus*)

afforded an opportunity of testing various remedies, and also led to a close study of the insect, which resulted in the conviction that something is still to be learnt about its life-history. As ordinarily stated, this is straightforward enough. The beetle appears in May and June, at first eating the buds and later on laying eggs in the blossoms. The larvæ feed on the fruit—living for the most part inside the receptacle—and, when fully fed, crawl away to turn to pupæ under the soil, or under the bark of the canes or the stakes used to support them. The principal facts observed which require explanation are these. First, the very early date at which beetles were found in the ground at the roots of the plants. The first time they were noticed was February 14, and from that time onward they were fairly numerous. Moreover *grubs* of the beetle were found in the ground on April 10. Now why the beetle should appear months before there are any blossoms to feed on requires explanation, and the presence of larvæ in April is still more unexpected. A possible root-feeding brood was suspected, but no evidence was found of it. Beetles were kept in captivity in the early spring and supplied with raspberry roots and soil, but they were not observed to feed upon the roots or to lay eggs on them. Then the pupæ (chrysalids) evaded all attempts to find them. In the spring numerous cocoons were found among the raspberry roots, but they were not those of the beetle, but of a lace-wing fly—one of the insects which live upon green-fly. Nor, curiously enough, could the pupæ be found after the attack, though the bark, the roots, and the soil were carefully examined. Some infested bushes were imprisoned under a structure of glass, perforated zinc, and gauze, and many additional grubs placed upon them, but a careful examination in October failed to reveal a single beetle in any stage of its life-history. Observations will be continued next year, and, it is to be hoped, with more success. In the search for the insect and in the application of various remedies the help of Mr. Sidney C. Lamb was most valuable, and with his aid a variety of dressings were experimented with, either in order to kill the beetles in the soil or to intercept the grubs when leaving the fruit for their winter quarters.

The subterraneous injection of carbon-bisulphide (four quarter ounce doses to each plant) seemed to have a beneficial effect. The plants so treated suffered a little in general condition, but this was probably because the injections were made so late in the season, namely, March 26. Probably it could be used a month earlier without harming the plants.

Further experiments will be made in dealing with this pest, and it is hoped that a careful observation of it throughout

another season will throw additional light upon some points in its habits which are at present obscure.

FOREST TREE PESTS.

The pests concerning which advice was asked included several insects injurious to forest trees. Among wood and bark-boring insects cases of attack by goat-moth, poplar beetle (*Saperda*), and elm-bark beetle were reported. Cockchafer grubs were in some instances injuring the roots of young trees in nurseries. Several species of aphidæ were complained of—the larch chermes most frequently.

Attacks of pine saw-fly were reported, but no examples of the new larch saw-fly were received. Preparations had been made for breeding out a number of the pupæ for the purpose of investigating the parasites which prey upon them, but in the absence of material this investigation had to be postponed. As usual, the beech coccus was a frequent subject of complaint, and the giant sirex was one of the favourite insects sent for identification. One of the commonest and most annoying pine tree pests in nurseries and gardens seems to be the pine-shoot tortrix. It lays its eggs in the leading shoots of young pines, and the caterpillars destroy the shoots and distort the growth of the tree. There is nothing to be done except to pick off and burn the infested shoots, but it should be remembered that the proper time for this operation is June. In July the moths come out, and if the destruction of the injured buds is to be of any benefit it must of course be done before the date of their emergence.

CECIL WARBURTON.

School of Agriculture,
Cambridge.

THE WOBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

FIELD EXPERIMENTS, 1910.	PAGE
CONTINUOUS WHEAT	322
CONTINUOUS BARLEY	326
ROTATION EXPERIMENTS	328
GREEN-MANURING EXPERIMENT	332
VARIETIES OF LUCERNE	333
EXPERIMENT ON THE USE OF LIME	334
EXPERIMENTS WITH NITROGENOUS TOP-DRESSINGS	335
(a) <i>On Oats</i>	335
(b) <i>On Mangolds</i>	336
(c) <i>Residual Value of top-dressings</i>	337
SUGAR-BEET	338
VARIETIES OF WHEAT	339
MANURING OF OLD PASTURE LAND	341
MISCELLANEOUS EXPERIMENTS	342
RAINFALL AT WOBURN, 1910	343
POT CULTURE EXPERIMENTS, 1909	343

FIELD EXPERIMENTS, 1910.

THE season 1910 must be classed as a bad one. The seeding time for wheat was very trying, the land being wet and cold, and delaying germination very much, so that the wheat never appeared until Christmas time. Then followed a cold spring and an almost sunless summer. Between January 1 and the end of April there were sixty-seven days on which rain in measurable amount had fallen, and the highest temperatures recorded were 57·6° F. to the end of March and 62° F. to the end of April. In May there were twenty days on which rain fell, sixteen in June, thirteen in July, and no less than twenty-one in August. The average temperature in June was 66·7° F., in July 64·8° F., and in August 67·4° F. But for splendid weather in September, the crops would have fared much worse than they did. The season, following as it did the very bad one of 1909, was especially hard on corn crops grown continuously, and great difficulty was experienced in keeping the land clean, this accounting for the continuously grown barley results being so inferior. The season was more favourable for root crops and also for grass, fair returns being reached in each case.

CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*), 1910 (34TH SEASON).

This experiment was carried out on the same lines as in 1909, the small dressing of 5 cwt. per acre of lime on plot 2aa being again repeated.

The usual preparation of the land being concluded, farmyard manure (made in the spring by bullocks in the feeding-boxes) was ploughed in on plot 11b on October 15, 1909. The actual weight per acre used, in order to give 100 lb. ammonia per acre, was 6 tons 3 cwt 1 qr. 12 lb. Lime was applied to plot 2aa on October 30. On November 9, 9 pecks per acre of "Square Head's Master" wheat were drilled, the seed having been obtained locally. At the same time, mineral manures were applied to plots 4, 5, 6, 8, 9, and 10a. The weather was cold and wet to the time of sowing, and the wheat took a long time to germinate. It did not appear above ground till Christmas Day, and even on January 5, 1910, it was not visible on plots 2a, 5a, 8a, and 8b. Frost and snow followed—January 21-28—and the plant looked by no means strong. Rape dust was applied to plot 10b on March 24, as also sulphate of potash to plot 11a. The first half-dressings of sulphate of ammonia and nitrate of soda were given on April 27, and the remainder on May 7. The wheat "bloomed" by June 28, and the crops looked very well, in particular the nitrate of soda plots. On the other hand, the farmyard manure plot (11b) was distinctly below the average and inferior to the rape dust plot (10b). The most striking features were the continued benefit from the 2 tons of lime per acre put on plot 2b no less than thirteen years previously, and the obtaining of a small crop on 2aa (previously bare) consequent on the repetition of lime, 5 cwt. per acre. Another remarkable feature was the strong growth on plot 4 (mineral manures only) of *coltsfoot*. What should occasion this is unknown, for the adjoining plot (5a), though only separated by a pathway a few feet wide, was practically free from coltsfoot. As the treatment of the different plots has gone on, there have been many peculiarities noticed with regard to the prevalence of certain weeds on certain plots, and this matter was made, in 1910, the subject of special study by Miss Brenchley, of the Rothamsted Agricultural Station, who visited Woburn for this purpose.

The cutting of the plots commenced on August 25, the crops were carted and stacked by September 5, and threshed on October 27. The harvest results are given in Table I., page 324.

The yields generally were well up to the average of the ten years, 1897-1906. The unmanured plots gave 14.1 bushels per acre; mineral manures alone rather less, viz., 12.6 bushels; the produce from farmyard manure was disappointing, viz., 18.1 bushels only, but rape dust gave 25.1 bushels. The highest yield was 27.8 bushels, from plot 9b (minerals, with nitrate of soda), the same minerals, with sulphate of ammonia, after application of lime, giving 24.1 bushels. While plot 2a

TABLE I.—*Continuous Growing of Wheat, 1910*
(34th Season).

(Wheat grown year after year on the same land, the manures being applied every year.)

Stackyard Field.—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 32s.	
		No. of bush.	Weight per bushel	Weight		s.	d.
1	Unmanured	13·5	Lb. 60·2	Lb. 43	C. q. lb. 12 1 27	31	6
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	—	3 16	—	—
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909 and 1910	12·3	56·0	48	12 1 22	30	0
2b	As 2a, with 2 tons lime, Dec., 1897	23·4	58·2	80	19 0 24	28	0
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905	22·2	56·5	80	22 0 24	28	0
3a.	Nitrate of soda (=50 lb. ammonia)	23·3	56·9	96	24 2 4	28	0
3b	Nitrate of soda (=25 lb. ammonia)	20·5	56·2	74	20 2 8	28	0
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, ½ cwt.)	12·6	60·6	33	12 2 24	31	6
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	17·0	60·0	64	15 2 26	31	0
5b	As 5a, with 1 ton lime, Jan., 1905	24·1	60·2	46	19 3 4	31	6
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	23·8	59·0	75	25 2 15	31	0
7	Unmanured	14·7	59·8	38	12 3 15	31	0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	7·6 ¹	58·0	32	7 1 26	30	0
8aa	As 8a, with 10 cwt. lime, Jan., 1905	22·5 ¹	59·7	84	21 3 6	30	0
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	4·9 ¹	58·0	28	5 0 20	31	0
8bb	As 8b, with 10 cwt. lime, Jan., 1905	12·1 ²	60·0	48	11 1 5	31	0
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	27·8 ¹	60·0	68	28 3 22	31	0
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years)	13·5 ¹	59·7	44	12 1 4	31	0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	22·9	58·7	52	21 3 22	31	0
10b	Rape dust (=25 lb. ammonia)	25·1	60·5	60	22 2 13	31	6
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia)	21·2	59·0	52	20 3 8	31	0
11b	Farmyard manure (=100 lb. ammonia)	18·1	59·7	66	17 0 15	31	0

¹ Applied.² Omitted.

TABLE II.—Continuous Growing of Barley, 1910
(34th Season).

(Barley grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 28s.	
		No. of bush.	Weight per bush.	Weight		s.	d.
1	Unmanured	3.9	52.0	Lb. 13	C. q. lb. 5 3 16	23	0
2a	Sulphate of ammonia (=25 lb ammonia)	—	—	—	2 12	—	—
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909 and 1910	3.5	52.0	20	6 3 18	23	0
2b	As 2a, with 2 tons lime, Dec., 1897	4.7	52.0	24	4 2 4	24	0
2bb	As 2b, with 2 tons lime (repeated), Mar., 1905	3.8	52.0	20	7 2 22	24	6
3a	Nitrate of soda (=50 lb ammonia)	10.0	52.2	96	10 2 17	23	0
3b	Nitrate of soda (=25 lb ammonia)	6.4	52.0	22	5 2 5	25	6
4	Mineral manures (superphosphate 3 cwt., sulphate of potash 1 cwt.)	8.4	52.5	55	6 3 24	26	0
5a	Mineral manures and sulphate of ammonia (=25 lb ammonia)	4.9	52.0	32	3 3 15	24	6
5aa	As 5a, with 1 ton lime, Mar., 1905	20.3	51.7	76	14 1 16	26	6
5b	As 5a, with 2 tons lime, Dec., 1897	14.8	52.7	36	10 2 9	27	6
6	Mineral manures and nitrate of soda (=25 lb ammonia)	13.1	52.1	84	8 3 16	28	0
7	Unmanured	3.1	50.0	13	4 0 20	25	0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb ammonia)	6.3 ¹	52.0	36	2 3 6	26	0
8aa	As 8a, with 2 tons lime, Dec., 1897	14.8 ¹	54.0	64	11 0 25	26	0
8b	Mineral manures, sulphate of ammonia (=50 lb ammonia) omitted (in alternate years)	—	—	—	1 16	—	—
8bb	As 8b, with 2 tons lime, Dec., 1897	8.8 ²	52.0	16	5 1 0	26	0
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb ammonia)	31.5 ¹	52.7	124	19 0 21	25	6
9b	Mineral manures, nitrate of soda (=50 lb ammonia) omitted (in alternate years)	15.3 ²	52.0	60	6 0 24	28	0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb ammonia)	12.6	52.5	80	8 1 12	25	6
10b	Rape dust (=25 lb ammonia)	11.7	52.2	96	7 3 25	25	6
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb ammonia)	18.3	52.1	100	11 2 20	25	0
11b	Farmyard manure (=100 lb ammonia)	17.0	52.2	82	11 1 3	25	6

¹ Applied.² Omitted.

(sulphate of ammonia only) was, as usual, an entire blank, the repetition of 5 cwt. per acre of lime, on plot 2aa, now gave 12·3 bushels, whereas in 1909 there was no crop; the 2 tons of lime per acre last applied to plot 2b in 1897 still continued to give a good yield of 23·4 bushels, being in excess of the 22·2 bushels on plot 2bb, which had the 2 tons of lime repeated in 1905. The latter, however, it will be seen, produced considerably more straw. This shows that the influence of lime is clearly marked for quite thirteen years. The produce of plot 5a (minerals and sulphate of ammonia, without lime) continued to fall, but plot 5b (the same manures, with 1 ton of lime per acre) yielded well, as also did 8bb (the same manures, with 10 cwt. per acre of lime in 1905), thus showing that 1 ton of lime, and even as little as 10 cwt., per acre, will tell for five years and more. These smaller quantities of lime, it should be said, were put on as "ground" lime. Nitrate of soda alone, about 1 cwt. per acre, gave (plot 3b) 20·5 bushels, and, at the rate of about 2 cwt. per acre (plot 3a), only slightly more, viz., 23·3 bushels, though the straw was considerably increased. With mineral manures in addition, 1 cwt. per acre of nitrate of soda yielded (plot 6) 23·3 bushels, the corresponding sulphate of ammonia plot, with lime (plot 5b), giving 24·1 bushels. The heavier dressing of nitrate of soda, with minerals (plot 9b), produced the highest yield, viz., 27·8 bushels, the omission of nitrate of soda for a single year (plot 9a) causing a fall to 13·5 bushels, or less than the unmanured yield. Lastly, as between the inclusion of potash or of phosphate in a mixed manuring, a slight advantage lay with the inclusion of phosphate, plot 10a giving 22·9 bushels, as against the 21·2 bushels of plot 11a (phosphate omitted).

When the corn came to be valued on January 4, 1911, the average for the district was put on a basis of 32s. per quarter of 504 lb. None of the plots quite reached this, the wheats, as a whole, being classed as poor and badly grown, lacking strength, and with much offal corn.

The best of the lot were the unmanured, minerals only, and rape dust plots; the worst, the nitrate of soda and sulphate of ammonia plots, these also giving the lowest weight per bushel, and the nitrate of soda plots the most tail corn.

CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*), 1910 (34TH SEASON).

As in the case of the wheat, so the repetition of 5 cwt. per acre of lime ("ground" lime) was made on plot 2aa, but there was no other change from the usual course.

After the preparation of the land, lime was put on plot 2aa on February 24, 1910, and farmyard manure (to give 100 lb.

ammonia per acre) ploughed in on plot 11b on March 1. Nine pecks per acre of "Goldthorpe" barley were drilled on March 22, mineral manures being applied to plots 4, 5, 6, 8, 9, and 10a on March 24. Plot 11a received its dressing of sulphate of potash on April 2, and plot 10b the rape dust on the same day. The nitrogenous top-dressings were given, the first halves on May 7, the second halves on May 23.

The crop came up badly and never looked otherwise than weak; weeds were very prevalent, and it was impossible to keep them down. Plot 4 (minerals only) showed peculiarities as to weed growth, just as did the corresponding plot in the wheat (see page 323). With the barley the prominent weed was horse-tail (*Equisetum arvense*), the spread of which on this particular plot has been remarkable within recent years, it not occurring to any extent on other plots. Another notable feature was that plot 2b clearly showed that the lime—2 tons per acre—put on in 1897 was being worked out; plot 5b also showed similar decline. The plot 9b, nitrate of soda (heavy dressing) with minerals, looked the strongest of all. Plot 2a (sulphate of ammonia only) was, as usual, quite blank; and plot 5a (sulphate of ammonia with minerals but no lime) looked little better, nor did the renewal (in 1905) of lime on plot 2bb, used along with sulphate of ammonia, seem to benefit except in weight of straw.

The barleys came into ear about June 28, but the straw was in all cases very short. The plots were cut towards the end of August, stacked on September 5, and threshed on October 29.

The harvest results are given in Table II., page 325.

The barley crop generally was very poor and considerably below the average. The unmanured plots gave only 3·5 bushels, the lowest produce for many years; mineral manures (plot 4) did better, viz., 8·4 bushels, but this plot, as noted, had a great deal of weed; farmyard manure (plot 11b) yielded 17 bushels, but rape dust (plot 10b) only 11·7 bushels, the reverse of the case with wheat. The highest produce was on plot 9b (heavy dressing of nitrate of soda, with minerals), 31·5 bushels of corn, with 19 cwt. of straw; the omission of the nitrate of soda for a single year reduced the corn (plot 9a) to 15·3 bushels. As a whole, the nitrate of soda plots did better than corresponding sulphate of ammonia plots even where lime had been applied with the latter. The double dressing of nitrate of soda increased the produce by 3·6 bushels when used alone (plots 3a, 3b), and by 18·4 bushels when used with minerals (plots 6, 9b), as against the single dressing. The limed plots, along with sulphate of ammonia, showed the lime to be practically worked out on plot 2b (after thirteen years), but both 5b and 5aa showed its effect, though on 2bb the repetition

of 2 tons of lime per acre in 1905 did little more than increase the straw. As between the inclusion of phosphate and potash respectively in a mixed manuring, the results again showed in favour of the potash (plots 10a, 11a).

The corn was valued on January 4, 1911, and was, speaking generally, in better condition and better harvested than the wheat. Several plots yielded quite useful barleys, the best being the nitrate of soda plots with minerals (plots 6 and 9a). The unmanured produce was of poor quality, as was also that from farmyard manure and from rape dust. Bigness of berry marked a number of the samples this season. The valuation was taken on a basis of 28s. per quarter of 448 lb.

ROTATION EXPERIMENTS (*STACKYARD FIELD*), 1910.

Rotation I. 1910, Barley—after Swedes.

On the upper half (sheep-feeding), 6½ tons to 11 tons per acre of swedes had been grown in 1909; this quantity was supplemented to make 12 tons of roots per acre, and feeding off with sheep commenced on January 19, 1910, the sheep having, in addition to the swedes and a little clover hay, decorticated cotton cake on plot 1, maize meal on plot 2, but no cake or corn on plots 3 and 4. The quantity of additional cake and corn was 920 lb. per acre, or about ½ lb. per head daily.

On the lower half (bullock-feeding), sheep fed off the roots (at the rate of 12 tons per acre) merely with a little clover hay chaff.

Ploughing of the land was finished, after the sheep-feeding, by March 16, and on March 23, 9 pecks per acre of "Goldthorpe" barley were drilled. The crop came up well and formed a great contrast to the adjoining continuous barley plots. There were no very marked differences between the plots, plot 1 looking, perhaps, rather the best. The crop was cut August 23-27, carted and stacked September 5, and threshed October 27. The results are given in Table III., p. 329.

On the upper half the decorticated cotton plot, as the appearances indicated, gave the highest yield, viz., 47·7 bushels, but it was not much in excess of the other plots; the yield from the maize meal plot (2), however, was the lowest of the four, though the reason for this is not apparent. The crop generally was higher than the barley crop of 1909, which itself was in advance of that of 1908.

On the lower half there was no difference between the decorticated cotton cake dung plot and the maize meal dung plot, but both were 4 to 5 bushels ahead of the plots where cake and corn had not been used in making the dung.

TABLE III.—*Rotation I. Barley, 1910.*

Stackyard Field—Produce per acre

Plot		Head corn			Tail corn	Straw, chaff, &c	Value of corn per quarter on basis of 28s
		Weight	Bush	Weight per bushel	Weight		
	UPPER HALF (Sheep-feeding)	C q lb		Lb	Lb	C. q lb	s d.
1	Swedes fed off with decorticated cotton cake	23 0 26	47 7	54 5	127	27 0 0	27 0
2	Swedes fed off with maize meal	19 2 0	40 5	51 0	108	23 1 3	27 6
3	Swedes fed off without cake or corn	20 0 7	41 6	54 0	130	24 2 0	28 6
4	Swedes fed off without cake or corn	22 2 11	46 9	51 0	130	27 1 13	29 0
	LOWER HALF (Bullock-feeding)						
5	Decorticated cotton cake dung plot	21 3 11	44 9	54 5	83	24 3 6	31 0
6	Maize meal dung plot	21 1 7	44 2	51 0	118	26 2 11	29 6
7	Dung plot without cake or corn	18 2 12	38 7	53 8	103	22 1 6	28 6
8	Dung plot without cake or corn	19 3 23	41 6	53 7	112	25 3 16	26 0

The barleys were adjudged to be an exceedingly good lot for the season, and to be mostly above average. The amount of offal corn was small.

Rotation II. 1910, Wheat—after Mustard.

The land, after cultivating and ploughing, was drilled on November 8, 1909, with 9 pecks per acre of "Square Head's Muster" wheat. It was never a strong crop, but suffered much from frost, the crop being, all along, a light and patchy one. It was in bloom by June 28, cut August 23, carted and stacked September 5, and threshed October 27. The results are given in Table IV., p. 330.

On the upper half (sheep-feeding), maize meal (plot 2) gave nearly 2 bushels more than decorticated cotton cake (plot 1), this being little more, however, than from the plots (3 and 4) where no cake or corn had been fed in 1907. It would seem, therefore, that by the time this, the fourth crop of the rotation, was reached, the manurial effects of the cake and corn fed on the land had been practically worked out.

TABLE IV.—*Rotation II. Wheat, 1910.*

Stackyard Field—Produce per acre

Plot		Head corn			Tail corn	Straw, chaff &c			Value of corn per quarter on basis of 32s
		Weight	Bush	Weight per bushel	Weight				
	UPPER HALF (Sheep-feeding)	C q lb		Lb	Lb	C q lb		s d	
1	Decorticated cotton cake plot	7 0 3	12 8	61 3	85	12 2 3		32 0	
2	Maize meal plot	7 3 15	14 6	60 5	89	12 0 13		31 6	
3	No cake or corn	7 0 7	13 1	60 1	63	10 1 2		31 0	
4	No cake or corn	6 0 8	11 5	59 2	90	11 0 17		31 0	
	LOWER HALF (Bullock-feeding)								
5	Decorticated cotton cake plot	6 3 20	12 8	60 7	44	11 2 7		32 0	
6	Maize meal plot	7 3 27	15 1	59 2	94	13 2 20		31 0	
7	No cake or corn	7 1 19	13 8	60 2	84	12 0 0		31 6	
8	No cake or corn	6 3 0	12 8	59 2	83	11 3 20		31 6	

On the lower half (bullock-feeding) much the same has to be recorded, the maize meal plot (6), however, giving the highest yield

The quality of the corn was better than on the continuous wheat plots, the grain showing more strength and being in good condition. The differences of quality were not marked as between the different plots.

Rotation III. 1910, Swedes—after Wheat

On the upper half (sheep-feeding) 4 cwt per acre of basic superphosphate and 1 cwt per acre of sulphate of potash were applied to each of the four plots on June 2, 1910, swede seed ("Invicta") being drilled at the same time. A good plant was obtained and the swedes were "singled" July 4-15. The roots grew very fairly, though there were blanks here and there.

On the lower half (bullock-feeding) farmyard manure, previously specially made in the feeding boxes, was applied to the four plots, 5, 6, 7 and 8, at the rate of 4 tons per acre, May 26-31. That for plot 5 was made by consuming decorticated cotton cake with roots and hay, for plot 6 by consuming maize meal, and that for plots 7 and 8 by the consumption of roots and hay alone. Swede seed was drilled, as on the upper half, on June 2, no mineral manures being, however, given.

The swede crop on both halves was pulled December 9-17, and the roots weighed. The results are given in Table V.

TABLE V.—*Rotation III. Swedes, 1910.*
Stackyard Field.

Plot	Produce of roots per acre			
	UPPER HALF (Sheep-feeding).			
1	Decorticated cotton cake plot (last fed in 1907)	T.	c.	q. lb.
		10	10	0 0
2	Maize meal plot (last fed in 1907)	11	14	1 4
3	No cake or corn	12	10	0 0
4	No cake or corn	13	5	2 24
	LOWER HALF (Bullock-feeding).			
5	Swedes manured with decorticated cotton cake dung, 1910	14	0	0 0
6	Swedes manured with maize meal dung, 1910	11	12	3 12
7	Swedes manured with dung made without cake or corn, 1910	11	15	2 24
8	Swedes manured with dung made without cake or corn, 1910	11	7	0 16

The crop varied from $10\frac{1}{2}$ to 14 tons per acre. The only point to note specially is that the cotton cake dung (plot 5) produced the highest yield, the maize meal dung giving, apparently, no benefit.

Rotation IV. 1910, Mustard—after Barley.

After the barley stubble had been ploughed in, 2 tons per acre of Buxton "ground" lime were given to plots 1, 2, 3 and 4, and the same to plots 5, 6, 7 and 8, on May 25. Mustard seed was drilled over the whole rotation on July 12. It came up well and gave a nice crop all over. This was cut green August 24-25, carted and weighed, the land being subsequently ploughed for wheat. The results are given in Table VI.

TABLE VI.—*Rotation IV. Mustard, 1910.*

Stackyard Field.—Green Produce per acre.

	Plot	Upper half (sheep-feeding)				Plot	Lower half (bullock-feeding)			
		T.	c.	q.	lb.		T.	c.	q.	lb.
After barley—decorticated cotton cake plot	1	3	16	0	14	5	3	9	1	14
After barley—maize meal plot	2	4	9	1	0	6	4	4	0	14
After barley—no cake or corn plot	3	4	3	0	14	7	4	9	2	0
After barley—no cake or corn plot	4	4	9	0	14	8	3	10	2	14

The green crop varied from $3\frac{1}{2}$ tons to $4\frac{1}{2}$ tons per acre, and the results do not call for particular comment, except that maize meal gave, generally, better results than cotton cake.

So far as the upper half of the rotation is concerned, the wheat crop of 1910 brought to a close the four-course series on Rotation II. since the adoption of the new plan of experiment; Rotation III. was similarly concluded with the wheat crop of 1909, while Rotations I. and IV. closed respectively in 1908 and 1907. On the lower half, Rotation II. was the only one to complete the full four-course with the wheat crop of 1910, Rotation I. reaching its second, and Rotation IV. its third, crop under the new plan.

It is not proposed to carry this on further, but to summarise the results and to renew the inquiry on somewhat different lines. This will commence in 1911.

GREEN-MANURING EXPERIMENT (*LANSOME FIELD*), 1910.

In 1910 wheat followed on the growing and ploughing-in of the green crops of 1909. The land was ploughed in September, 1909, and subsequently cultivated. On November 10 "Square Head's Master" wheat was drilled at the rate of 9 pecks per acre. Though somewhat weakened by frosts, it came a fair crop, that after tares ploughed-in looking, as usual, good at first, but later on it fell far behind the other two, there being little to choose between the rape and the mustard plots. The crop was cut on August 20, 1910, carted September 2, and subsequently threshed and weighed. The harvest results are given in Table VII.

TABLE VII.—*Green-manuring Experiment (Lansome Field).*

Produce of Wheat per acre, 1910.

Plot	Manuring	Head corn			Threshed corn	Straw, chaff, &c.	Value of corn per quarter on basis of 32s.	
		Weight	Bush.	Weight per bush.	Weight			
		Lb.		Lb.	Lb.	Cl. q. lb.	s.	d
1	Tares ploughed in, with mineral manures.	831	13 6	60 8	64	11 1 0	31	6
2	Tares ploughed in, with lime	984	15 8	62 2	40	14 0 25	31	6
3	Rape ploughed in, with mineral manures.	1,095	17 9	61 1	54	14 1 18	31	0
4	Rape ploughed in, with lime	1,558	25 8	61 5	55	20 0 22	31	0
5	Mustard ploughed in, with mineral manures.	1,290	21 3	60 5	66	18 0 1	31	0
6	Mustard ploughed in, with lime	1,487	23 4	61 3	54	19 0 6	31	0

It will be observed that in each case the limed plots (2, 4, 6) gave a better crop than the corresponding plots (1, 3, 5) to which mineral manures but no lime had been given with the green crops. This difference had not been previously noted, and may be due to the depletion of the soil in lime. As between the wheat crops grown after green-manuring with tares, rape, and mustard respectively, there were the same general differences as previously noticed, the average of the two "tares" plots being 14·7 bushels per acre, that of the "rape" plots 21·6 bushels, and of the "mustard" plots 22·3 bushels. The corn, as a whole, was of rather poor quality, too yellow in colour, and lacking in "strength."

These results, confirmed, as they have been, by frequent repetition, allow of no doubt as to their significance, and clearly show that, on a soil such as that of Woburn, mustard is a better crop for ploughing-in green than are tares. It is now proposed to vary the experiment by growing the green crops as before, but feeding them on the land by sheep, instead of turning them in green.

VARIETIES OF LUCERNE (*STACKYARD FIELD*), 1910.

The three plots of Lucerne—Provence, American, and Canadian—first sown in 1905, still remained on the ground, though the Argentine varieties, sown in 1909, had failed. The plots were cleaned in March, 1910, and during the season three cuttings of each lot were obtained, viz., on June 30, August 26, and November 8, after which the plots were all dug up in preparation for a more extended experiment with lucerne, the Provence and American varieties having, to all purpose, come to an end, though the Canadian variety would have continued to yield a crop for some years more. The weights of green produce are given in Table VIII.

TABLE VIII.—*Varieties of Lucerne (Stackyard Field).*

Plot	Green produce per acre, 1910 (fifth year)				
		T	c.	q	lb.
A	Provence seed	9	8	2	0
B	American seed	9	4	1	14
C	Canadian seed	16	10	0	0

It will be thus seen that in 1910, as for every one of the four previous years, the Canadian variety has given a markedly higher crop than the other two. The real point of interest is, however, what has been the cause of this? Is it possible that the seed, grown under Canadian conditions, has become more hardy and better suited for a

climate such as that of England? These results led to a considerable amount of inquiry regarding Canadian lucerne, and as to what the particular seed used in this experiment was. Through the kindness of Messrs. Sutton & Sons and also of Dr. W. Saunders, chief of the Experimental Farms in Canada, considerable information was obtained. But this went all to show that lucerne seed is not, as yet, a subject of general export from Canada, though its growing in that country is being largely extended. Moreover, inquiries failed to ascertain what particular variety the seed used at Woburn originally was, and so there was not anything further to be gained by prolonging the inquiry. It is in contemplation, however, to get other lots of seed from Canada, of known origin, and to try these in comparison with Turkestan, Provence, and other varieties of lucerne commonly obtainable.

EXPERIMENT ON THE USE OF LIME (*BUTT FURLONG*), 1910.

Wheat followed the clover crop of 1909, the clover ley being ploughed up September 24 to October 14, 1909. Nine pecks per acre of "Square Head's Master" wheat were drilled on November 13, and the crop came up well. On November 23 ground lime, at the rate of 10 cwt. per acre, was applied, for the second time, to plot 3, this having received the first dressing in autumn, 1907 (accordingly 1 ton per acre in all), while plot 2 had only the single dressing of 2 tons per acre of lump lime in 1907. The lime, it should be said, was in each case from the same source. The wheat came into ear by June 28, 1910, and was a nice crop. It was cut on August 18, and carted September 1 and 2. The results of threshing are given in Table IX.

TABLE IX.—*Experiment on Use of Lime (Butt Furlong).*

Produce of Wheat per acre, 1910.

Plot	Treatment per acre	Head corn		Tail corn	Value of corn per quarter on basis of 32s.	
		Bush	Weight per bush.	Weight		
1	No lime	37.0	Lb 63.2	Lb 146	s 32	d 0
2	Lump lime, 2 tons	38.1	62.8	150	32	0
3	Ground lime, 10 cwt. (1907), repeated 1909	42.1	63.0	150	32	0

The yield from the application of ground lime was 4 bushels more per acre than on the plot treated in 1907 with 2 tons per acre of lump lime. This latter application,

however, had given, in 1908, 10½ bushels more of barley than the ground lime, so that there still remains a balance in favour of the lump lime. Swedes will be grown in 1911. The corn was valued at the same figure—32s. per quarter—on all three plots; it being reckoned quite up to average, and possessing both “strength” and good colour.

EXPERIMENTS WITH NITROGENOUS TOP-DRESSINGS, 1910.

(a) Experiment on Oats.

Wheat, barley, mangolds, and potatoes having been the subject of experiment in previous years, it was decided to try, in 1910, the effect of different top-dressings on oats.

The previous crop was barley; consequently, in considering the produce of oats in 1910, it must be borne in mind that this was the second white crop, and on light land. After the ploughing of the barley stubble in September, 1909, stubble turnips were drilled, and sheep put on during December and January to fold them off. The land was cultivated in February, 1910, and, on March 4 and 5, “Black Tartar” oats were drilled, 3 cwt. per acre of mineral superphosphate being given to the land ten days later. Clover seed was drilled between the oats on May 21, and the different nitrogenous top-dressings applied to the oats the same day. The oats, for a second white crop, looked very fair, though short in the straw. The only top-dressing that appeared to injure the crop at all was the calcium cyanamide; this scorched the flag of the oats somewhat at first, but the plant soon recovered. The plot that had no top-dressing looked much behind all the others, of which that top-dressed with nitrate of soda was probably the most advanced. The quantities applied were regulated on the basis of the nitrogen contained in 1 cwt. per acre of sulphate of ammonia, the same amount of nitrogen (as determined by analysis of the top-dressings) being applied in each case. Inasmuch as the present market prices of calcium cyanamide and calcium nitrate are regulated by those ruling for sulphate of ammonia and nitrate of soda, this would practically mean an equal money value in the case of each plot.

The oats were cut on August 16-17 and carted September 2-3. The results obtained on threshing are given in Table X., page 336.

The highest produce, it will be seen, was obtained from calcium cyanamide, this being 1 bushel in advance of that from nitrate of soda, and 3 bushels more than from nitrate of lime and from sulphate of ammonia. All the dressed plots exceeded in produce the untreated plot, as was apparent during the time of growth. In regard to quality, the differences were not very marked, the oats generally being nearly average samples,

TABLE X.—*Experiment with Nitrogenous Top-dressings on Oats, 1910.*

Butt Close—Produce per acre.

Plot	Manures per acre	Head corn			Tail corn	Value of corn per quarter on basis of 19s	
		Weight	Bush.	Weight per bushel	Weight		
		Lb		Lb.	Lb.	s.	d.
1	Calcium cyanamide ¹	1,916	52 1	36 8	233	18	0
2	Calcium nitrate ¹	1,812	49 8	36 8	245	18	6
3	No top-dressing	1,572	42 9	36 6	165	19	0
4	Nitrate of soda ¹	1,779	51 2	34 7	199	18	0
5	Sulphate of ammonia, 1 cwt	1,771	48 7	36 4	225	18	6

¹ In quantity to supply as much nitrogen as that contained in 1 cwt sulphate of ammonia

the best being the untreated, and the next best the nitrate of lime and sulphate of ammonia lots.

It would appear from this experiment that the conclusions of 1909 are confirmed by the present series, and that when the same money value—or, as it is better stated, the same amount of nitrogen—is applied, it does not, in the case of corn crops, matter much in which form of these nitrogenous top-dressings it is given.

(b) *Experiment on Mangolds.*

In 1910, a repetition of the mangold experiments of 1909 was carried out on Warren Field, the variety grown being "Yellow Globe." The previous crop was wheat. London dung, at the rate of 12 tons per acre, was spread in April, 1910, and along with it was given, to all the plots alike, a dressing of 3 cwt. per acre of mineral superphosphate, 1 cwt. per acre of sulphate of potash, and 2 cwt. per acre of common salt. The mangold seed was drilled on April 26-28. After hoeing and singling, the nitrogenous top-dressings were applied on July 19, the same amount of nitrogen being, as in the experiment on oats just recorded, given to each plot. The crop grew well, and was pulled November 2-11 and the roots weighed.

The results are given in Table XI., page 337.

The only crop that fell in produce below that of the "standard dressing" was the sulphate of ammonia one, and it is worthy of note that this same occurred in the experiments of 1909. All the other top-dressings showed an increase, this varying from about 1½ tons per acre with soot to 5½ tons per acre with calcium nitrate. Calcium cyanamide produced 1 ton more of roots than did nitrate of soda, but, in turn, 1 ton less

TABLE XI.—*Experiment with Nitrogenous Top-dressings on Mangolds, 1910.*

Warren Field.

Plot	Manures per acre	Produce of roots per acre			
		T	c	q	lb.
1	Standard dressing ¹ only .	31	11	3	14
2	" " with sulphate of ammonia 1 cwt	29	3	3	0
3	" " " nitrate of soda ² .	34	15	0	0
4	" " " calcium nitrate ² .	36	16	3	14
5	" " " calcium cyanamide ² .	35	15	2	14
6	" " " soot ² .	33	0	0	0

¹ Dung 12 tons superphosphate 3 cwt, sulphate of potash 1 cwt, salt 2 cwt per acre² In quantity to supply as much nitrogen as that contained in 1 cwt sulphate of ammonia

than calcium nitrate. These were the relative positions occupied in the experiments of 1909.

Accordingly, both the new materials—calcium cyanamide and calcium nitrate—would seem to answer perfectly well for the mangold crop, and to be quite as good, or, possibly, slightly better for them than nitrate of soda supplying the same amount of nitrogen. Sulphate of ammonia, on the other hand, would appear to be less beneficial than the other nitrogenous top-dressings for a mangold crop.

(c) *Residual value of Nitrogenous Top-dressings.*

In comparing the different nitrogenous top-dressings used in the foregoing experiments, it was of importance to consider, not only the effect produced upon the particular crop to which they were applied, but also whether they, or any of them, left any residue over for the use of subsequent crops. It is well known that nitrate of soda and sulphate of ammonia—more particularly the former—leave practically nothing for a second crop, but it was thought possible that, on a light soil such as that of Woburn, and deficient in lime, calcium nitrate and calcium cyanamide might do some good by reason of the lime they respectively contained. Accordingly it was decided, after the mangold experiment of 1909 in Road Piece Field, to grow a wheat crop in 1910, and to give no further manuring, but to see what was left over, possibly, from the applications of 1909. All the plots had been manured for mangolds, in 1909, with 12 tons per acre of dung, 3 cwt. per acre of mineral superphosphate, 1 cwt. per acre of sulphate of potash, and 2 cwt. per acre of common salt, the nitrogenous top-dressings (each supplying the same amount of nitrogen as in 1 cwt. of sulphate of ammonia) being given additionally. Nine pecks per acre of "Square Head's Master" wheat were drilled on the plots on

November 25, 1909, and a useful crop came up which showed very little difference between the several plots. The crop was cut on August 19, 1910, carted September 1 and 2, and threshed on October 26.

The results are given in Table XII.

TABLE XII.—*Experiment on Residual Value of Nitrogenous Top-dressings applied to Mangolds, 1909. Crop of 1910, Wheat.*

Road Piece Field—Produce per acre.

Plot	Manures per acre used for mangolds, 1909	Head corn			Tail corn	Value of corn per quarter on basis of 32s.
		Weight	Bush	Weight per bushel	Weight	
		Lb.		Lb.	Lb.	q. d.
1	Sulphate of ammonia, 1 cwt.	1,550	25 3	61 2	90	31 0
2	Nitrate of soda ¹ . . .	1,800	29 2	61·5	87	31 6
3	Calcium nitrate ¹ . . .	2,180	35 0	62·2	100	31 6
4	Calcium cyanamide ¹ . . .	2,072	34·1	60 8	110	31 6
5	No top-dressing . . .	1,990	32 2	61·7	85	31 6

¹ In quantity to supply as much nitrogen as that contained in 1 cwt. sulphate of ammonia.

From these figures it will be seen that the residue left over for a second crop was in no instance of material value. Nitrate of soda and sulphate of ammonia, as was expected, showed no residue, but rather gave a lowering of the produce; calcium cyanamide was responsible for a surplus of 2 bushels per acre of corn, and calcium nitrate for 3 bushels; and, possibly, this was connected with the fact of their both supplying some lime to the land. At best, however, the influence was not very marked, and there is nothing at present to lead one to think that, in regard to the new nitrogenous materials, their lasting effect requires to be taken into serious consideration.

SUGAR-BEET.

As mangolds were being grown in Warren Field (see page 336) it was thought well to grow experimentally also some sugar-beet. Accordingly, a plot alongside the mangold plots was put in with sugar-beet under just the same conditions, manuring, &c., as the ordinary crop of mangolds. The seed used was white Silesian beet, and this was drilled on April 26, 1910. The crop was pulled on November 2 and weighed, the comparative weights of it and the mangolds being:—

	Produce of roots per acre			
	T	c	q.	lb.
Mangolds ("Yellow Globe").	31	11	3	14
Sugar-beet	12	2	2	0

Samples were drawn from each crop and then analysed for sugar, the mangolds giving 6 per cent. of sugar, which would amount to 2.25 tons of sugar to the acre, whereas the sugar-beet showed 14.53 per cent. or 1.82 tons of sugar to the acre. It is only fair, however, to mention that the sugar-beet was grown, like the mangolds, in rows 24 in. apart, whereas for a factory they would probably be grown only 18 in. apart, and the yield might be increased by fully one-quarter. On the other hand, the sugar-beet, by reason of its being set deep down in the ground, was a considerably more expensive one to raise.

VARIETIES OF WHEAT.

Considerable attention having been drawn to the newly-introduced "French" wheats, and also to the new "types" of wheat bred, by hybridization, by Prof. Biffen, of Cambridge University and Botanist to the R.A.S.E., it was decided to make an extended trial of these, and to compare them with ordinary English wheats. An area was set apart in Warren Field, the wheat following a well-manured potato crop grown in 1909. The French wheats tried were "Treasure," "White Marvel," "Red Marvel," "Sensation," and "Dreadnought"; the English varieties "White Stand-up" and "Red Admiral"; while Prof. Biffen sent seed of the two kinds known as "Cambridge No. 1" (or "Little Joss") and "Cambridge No. 2" (or 8b). The "Little Joss" is a cross between "Girkha" and "Square Head," and is grown for its rust-resisting properties as well as for its good yield, whereas the "Cambridge No. 2" is a cross between "Rough-chaff" and "Red Fife," and is grown mainly for "strength."

In addition to these there was grown in another field (Lansome Field) of much lighter character than Warren Field, a plot of the new Dutch spring wheat "Wilhelmina." The wheats (winter sown) were drilled on November 19, 1909; the first to show were the English varieties, then the "Red Marvel" and "White Marvel" (French); "Dreadnought," "Sensation," and "Treasure" were very backward. There was a good deal of frost in January, 1910, and by February the failure of these last three lots was so pronounced that they had to be ploughed up, and were resown March 8-18. Meanwhile the two "Cambridge" wheats had gone on very well and stood the frost, as did also the two ordinary English wheats. The Dutch "Wilhelmina" wheat was drilled in Lansome Field on March 5, 1910, at the rate of 9 pecks per acre. A top-dressing of soot (8 cwt. per acre) was given to it on May 3, and a very nice crop was obtained, which was marked by its standing up well and by "tillering out" splendidly. This crop was greatly admired by visitors to the farm.

The ordinary English varieties, "White Stand-up" and "Red Admiral," were the first to "bloom," then the two Cambridge wheats, No. 2 being the earlier; of the French wheats, "Red Marvel" was the earliest. "Red Admiral" showed the longest straw and was a very nice piece of wheat. Of the two Cambridge varieties, No. 1 was generally preferred.

The crops in Warren Field were all cut on August 20 and carted September 2; the "Wilhelmina" wheat in Lansome Field was cut September 1 and carted September 18. The harvest results are given in Table XIII.

TABLE XIII.—*Varieties of Wheat, 1910.*

Warren Field and Lansome Field—Produce per acre.

Varieties	Head corn			Thill corn	Straw, chaff, &c.	Value of corn per quarter on basis of 32s.	
	Weight	Bush.	Weight per bush	Weight			
	Lb.		Lb.	Lb	C. q. lb.	s.	d.
"White Stand-up" (English)	1,804	29·6	61·0	91	23 5 25	30	6
"Red Admiral" (English)	2,325	37·3	62·2	88	34 2 25	31	6
"Treasure" (French), spring- sown	1,787	32·8	54·5	115	27 3 16		
"White Marvel" (French)	1,555	25·6	60·8	55	23 1 23	31	0
"Red Marvel" (French)	1,645	26·7	61·5	73	22 0 1	31	6
"Sensation" (French), spring- sown	1,751	31·3	56·0	113	24 0 26	—	
"Dreadnought" (French), spring-sown	1,315	22·8	57·7	81	19 0 19	30	0
Cambridge No. 1 ("Little Joss")	1,878	30·3	62·0	121	30 0 17	31	6
Cambridge No. 2 (8b)	1,260	20·0	63·0	117	29 0 5	32	0
Lansome Field.							
"Wilhelmina" (Dutch), spring- sown	2,797	47·4	59·0	449	38 0 0	31	0

The fact that three of the French varieties had to be resown in spring militates somewhat against a fair comparison of all the results, but it is to be observed that, despite this, two of the three gave a higher produce than did the other French varieties sown in autumn. The ordinary English variety, "Red Admiral," produced a larger crop than any of the French or the Cambridge wheats; this amounted to 37·3 bushels of corn with 34½ cwt. of straw per acre, the next highest being the French wheat "Treasure"—spring-sown—with 32·8 bushels of corn and 28 cwt. of straw per acre. The yield of "Dreadnought" (French) was low, and both the

Cambridge wheats were somewhat disappointing in their yields, the "Little Joss" giving 30·3 bushels of corn with 30 cwt. of straw per acre, and the Cambridge "No. 2" only 20 bushels of corn with 29 cwt. of straw per acre.

Far above all these yields was that of the "Wilhelmina" wheat, which, though spring-sown and grown on a much lighter soil than that of Warren Field, produced 47·4 bushels of corn and 38 cwt. of straw per acre.

In regard to quality, the two Cambridge wheats stood highest, both being described as nice wheats and in good condition. No. 2 was uniform in growth and with plenty of "strength." Of the ordinary English kinds, "Red Admiral" was the better, and was a useful sample of well-grown wheat, though not quite strong enough; the "White Stand-up" was inferior and weak. Of the French wheats the "Red Marvel" and "White Marvel" were the best, and "Dreadnought" a very poor sample; the other varieties were more or less damaged in the stack, and it would not be fair to assign values to them. Lastly, the "Wilhelmina" wheat, though a heavy yield, was considered a poor sample, with very little strength.

The results generally, it will be seen, are not favourable to the French wheats, but, as some doubt existed as to the soundness of the seed supplied in 1909, it may be well to repeat the trials before coming to a definite conclusion. Also, as regards the Cambridge wheats, the results must be considered somewhat disappointing, though, here again, repetition of the trial is desirable in order to see whether valuable qualities not possessed by the ordinary varieties of wheat may not be developed.

MANURING OF OLD PASTURE LAND (*BROAD MEAD*), 1910.

The plots in Broad Mead had been grazed in 1909 with cattle. After the cattle were taken off, manuring (last done three years previously) was again given to the various plots. Farmyard manure—12 tons per acre—was spread on plot 6 on January 13, 1910; basic slag on plots 1 and 3, on January 15, also superphosphate on plot 2 the same day; lime on plot 5, January 26. The plots were all chain-harrowed and rolled, and, on April 20, sulphate of potash was given to plots 2 and 3; and, finally, nitrate of potash to plot 1 on April 22. The grass was cut June 21-22 and made into hay, the latter being weighed, and samples taken for subsequent botanical examination by Professor Biffen, the Botanist of the R.A.S.E.

The results of the weighing and of the botanical examination are given in Table XIV.

TABLE XIV.—*Grass Experiments (Broad Mead).*

Produce of Hay, 1910, and botanical separation

Plot	Manures per acre in 1901, 1904, 1906, and 1908	Weight of hay per acre	Botanical separation		
			Gramineæ	Leguminosæ	Miscellaneous
		T c q. lb	per cent.	per cent.	per cent.
1	Basic slag, 10 cwt.; nitrate of potash, 1 cwt.	1 12 0 0	81.7	3.6	11.7
2	Mineral superphosphate. 5 cwt.; sulphate of potash, 1 cwt.	1 7 0 0	82.7	9.3	8.0
3	Basic slag, 10 cwt.; sulphate of potash, 1 cwt.	1 15 3 0	84.0	8.0	8.0
4	No manure	1 5 2 0	90.0	3.8	6.2
5	Lime, 2 tons	1 2 1 0	87.3	4.5	8.2
6	Farmyard manure, 12 tons	1 18 1 0	86.3	6.4	7.3

As usual, the highest produce of hay was given by the farmyard manure, but the quality of this was coarse, and there was but little clover in it. The next highest yield was from the use of basic slag with sulphate of potash (plot 3), mineral superphosphate with sulphate of potash (plot 2) yielding nearly 9 cwt. per acre less. All the plots with the exception of the limed one (plot 5) gave an increase over the unmanured plot, and on the limed plot the finer herbage and fresher appearance were, as in other years, very marked, though the hay was less in amount. It is clear, however, that this plot requires something further than lime to stimulate it, and a change in the plan will now be made.

The botanical examination of the herbage yielded results much on the general lines of previous years. The two plots (2 and 3) to which sulphate of potash had been applied contained more leguminosæ than did any of the others; plot 2 (superphosphate and sulphate of potash) giving the most, as was the case in 1908. The lowest proportion of leguminosæ was found on the unmanured plot (plot 4), and on that manured with nitrate of potash and basic slag (plot 1). The most marked changes from previous years were—(1) the increase in the leguminous herbage on the farmyard manure plot (plot 6), and (2) the general increase all round of leguminosæ and of "miscellaneous" plants. In 1908 the highest percentage of leguminous herbage was 4.5 (plot 2), and the lowest .07 (plot 1); now (1910) the highest percentage was 9.3, the lowest 3.6, these being given by the same plots respectively as in 1908.

MISCELLANEOUS EXPERIMENTS.

In addition to the foregoing, other experiments have been carried out.

(a) *Experiments with different kinds of Lime on Old Pasture (Broad Mead), 1910.*

Among the new experiments is one on the relative values of different kinds of lime on old pasture. This was commenced in 1910 on Broad Mead, six plots being marked out and dressed respectively as follows:—

Plot 1 with Buxton lime	2 tons per acre.
" 2 " Chalk lime	2 " " "
" 3 " Magnesian lime	2 " " "
" 4 " No Lime	
" 5 " Lias lime	2 " " "
" 6 " Oolite lime	2 " " "

As the applications were only put on in 1910, and as it will take time for any effects to show, it is not desirable to put out the results obtained for hay for this first season.

(b) *Potato-spraying Experiments (Lansome Field), 1910.*

An area of land in Lansome Field was put at the disposal of Professor Spencer Pickering, Director of the Woburn Experimental Fruit Farm, who carried out on it a series of experiments on different methods of spraying potatoes as a preventive of "potato disease." These experiments will be separately dealt with by Professor Pickering in his Report of the Fruit Farm.

RAINFALL AT WOBURN EXPERIMENTAL STATION, 1910.
(292 ft. above sea level.)

	1910		1910
	In.		In.
January	1.50	July	1.95
February	2.38	August	2.33
March . . . . .	.82	September . . . . .	.68
April	1.85	October	2.80
May	2.71	November	3.55
June	1.53	December	4.72
		Total	26.82

POT-CULTURE EXPERIMENTS, 1909.

THE experiments conducted in 1909 were:—

1. Hills' Experiments:—

- (a) The influence of salts of Lithium and Caesium on Wheat.
- (b) The influence of salts of Zinc on Wheat.
- (c) The influence of salts of Iron and Manganese on Barley.

2. Experiments with Lime and Magnesia in different forms on Wheat.

3. The influence of Lime on a soil rich in Magnesia.
 4. The influence of Magnesia on Clover and Beans.
 5. Green-manuring Experiments.
 6. Experiments with Nitrogenous Top-dressings.
 7. Experiments on the Inoculation of Crops.
1. *Hills' Experiments*—(a) *The influence of salts of Lithium and Caesium on Wheat.*

The experiments of 1908 had shown that the presence of as little as $\cdot 00375$ parts of lithium, when added, in the form of different salts, to 100 parts of the Woburn soil exerted a harmful influence, this being most marked with the carbonate and least with the nitrate. In 1909 the same salts were used, but in even lesser amount, viz., to supply $\cdot 0018$ per cent. of metallic lithium to the soil. Along with this was a similar experiment with the same salts (chloride, sulphate, carbonate, and nitrate) of caesium, the amount of metallic caesium being, however, $\cdot 0036$ per cent. As before, the salts were closely incorporated with the whole of the soil. The wheat was first sown on November 28, 1908, but, owing to frost and snow, had to be resown on January 18, 1909. The germination was very fair all round and presented no special features. The first differences were apparent at the end of April, when the carbonate of lithium and the chloride of lithium plants looked yellowish and inferior to the others; the caesium plants, however, were all quite normal. At the beginning of June a great improvement was shown with all the lithium sets, and it appeared as if the point had been reached where the toxic effect of the salts was no longer exerted. Measurements of the straw and ear showed that in all cases of treatment these were somewhat less than with the untreated lots. The crops were cut on August 25, 1909, and the results obtained were :—

	Corn		Straw	
	Weight	Percentage of untreated	Weight	Percentage of untreated
	Grammes	Per cent.	Grammes	Per cent.
No treatment . . .	17.33	100	30.62	100
Lithium chloride. . .	20.79	119	31.10	101.6
Lithium sulphate . . .	19.98	115	30.96	101.1
Lithium carbonate . . .	19.90	115	30.98	101
Lithium nitrate . . .	34.27	198	49.96	163
No treatment . . .	17.33	100	30.62	100
Caesium chloride . . .	19.42	112	31.39	102
Caesium sulphate . . .	18.74	108	31.12	101
Caesium carbonate . . .	15.21	87	27.45	90
Caesium nitrate . . .	20.11	116	34.40	112

These figures show that a point has now been reached where the application of salts of lithium ceases to be injurious, but would even appear to have a stimulating effect. This was most marked with the nitrate. Simultaneously, it would seem to be brought out that caesium salts, in the quantity here used, exerted no injurious influence; the only indication of this being, possibly, with the carbonate.

Accordingly, we may conclude from the series of experiments with lithium, now conducted over several years, that salts of this metal, supplying it in not greater quantity than '002 per cent. of the soil, will do no harm, but that, when given above that quantity, they will have an injurious effect on the wheat plant. Caesium salts, on the other hand, would, so far, appear to have no injurious effect even when used in amount to give '0036 parts of the metal to 100 parts of soil.

(b) The influence of Zinc Salts on Wheat.

Magnesium salts applied to wheat having shown, in previous years, striking results, it was determined to try, in 1909, experiments with another metal of this same group, zinc being selected for the purpose. The salts employed were the oxide, chloride, sulphate, and carbonate, each application supplying the same amount of the metal zinc, viz., '04 per cent., or '04 parts to 100 parts of soil, and the salts being mixed intimately with the whole bulk of the soil.

After a first sowing in December, which was spoilt by frost and snow, a resowing on January 18, 1909, was made. In all cases of application of zinc salts germination was distinctly retarded, though, eventually, from seven to eleven of the twelve seeds sown came up. By April 25 the use of the soluble salts—the chloride and sulphate—had produced decidedly harmful effects, as shown in the crop when compared with the untreated. The insoluble salts—the oxide and carbonate—while also showing injury, did not do so to the same extent. The injury was principally seen in the absence of tillering, and in the weakness of the straw. From this they never recovered, and it suffices to say that it was shown that zinc to the amount of '04 per cent. of the metal, in a soil, will exert a toxic effect, and that the injury is the greater with the more soluble salts. The experiment will be continued, using zinc in smaller amounts.

(c) The influence of Iron and Manganese on Barley.

Other workers besides ourselves at Woburn having shown that iron and manganese salts, used in small quantities, have exercised a stimulating effect upon cereal crops, the present series of experiments was started in 1909 with the object of ascertaining whether altering the ratio of one class of salt to

the other had any influence on the result. Accordingly, it was decided to start, with barley, two sets, in the former of which sulphate of iron was kept at one figure, viz., '02 per cent. on the soil, and sulphate of manganese gradually increased from '005 per cent. to '01, '02, '03, '045, and '06 per cent. respectively; and in the latter, sulphate of manganese was kept invariable ('02 per cent.), and sulphate of iron gradually increased from '005 per cent. to '06 per cent. The salts were mixed with the whole of the soil and barley was sown on April 7, 1909. The germination period showed no particular features except with the heaviest application ('06 per cent.) of sulphate of manganese, where considerable retardation took place; nor during growth were there any marked differences to record. The crop was harvested on August 21, and the results showed all round a slight stimulating effect from the use of the salts. The differences in weights of corn and straw, as between the different applications, were but small and hardly call for mention in detail. Taking the "untreated" returns as 100, the "treated" results ranged from 101 to 111 in the corn and from 107 to 125 in the straw. No clear differences could be drawn between the addition in increasing amounts of sulphate of iron or of sulphate of manganese respectively; all alike gave evidence of slight stimulating effect produced. The "optimum" amount that can be added has not, however, been as yet decided.

2. *The influence of Lime and Magnesia in different forms on Wheat.*

Following up previous work with lime and magnesia, it was decided to try not merely lime and magnesia as such, but to employ also the respective limestones, using them in (a) a coarsely-ground and (b) in a finely-ground state. Lime and magnesia were employed at the rate of 1 ton, and the limestones at that of 1·6 tons per acre, as calculated to supply the same amounts of lime and magnesia respectively as the burnt stone. Buxton limestone, and the same burnt into lime, and magnesian limestone (obtained from Yorkshire), and the same burnt, were employed. The soil was the ordinary Woburn soil, containing about '26 per cent. of lime and '09 per cent. of magnesia, and the applications were given by mixing with the top 3 in. of the soil only, so as to imitate what would be done in practice. The several pots, after one failure through frost and snow, were sown on January 18, 1909. The germination was fairly regular, and by May the finely-ground limestone lot was superior to both the coarsely-ground and the lime lots, the magnesia lots—whether as burnt or ground limestone—being inferior. By the beginning of July the appearances were

much the same. The crops were duly cut and weighed, and the results are given in the following table, in which are included the results of the next section of the experiments also :—

	Corn		Straw	
	Weight	Percentage of untreated	Weight	Percentage of untreated
WOBURN SOIL				
No treatment	Grammes 16·82	Per cent 100	Grammes 31·04	Per cent 100
Buxton lime	15 18	90	26·58	85
" limestone, coarsely ground	17·74	105	31 18	101
" " finely " "	18·18	108	31·26	101
Magnesian lime	16·63	98	30·62	98
" limestone, coarsely ground	14 90	89	27·04	87
" " finely " "	15·97	95	26 87	86
HEREFORDSHIRE SOIL.				
No treatment	32·63	100	40·78	100
With lime added, to 1·25 per cent	31·20	105	42·60	104
" " " " 1·50 "	32·77	100	45·67	111
" " " " 1·75 "	29·03	89	46·52	114
" " " " 2·00 "	25·20	77	48·40	119
" " " " 2·25 "	23 21	71	47·00	115

From these figures it would appear, in the first place, that the influence of burnt lime had been inferior to that of ground limestone, whether coarse or fine; also that magnesia, whether as limestone or burnt into lime, had not done as well as the pure carbonate of lime. The former result is quite borne out by experience, on the field scale, in Stackyard Field (plot 2bb), where applications of burnt lime have not shown good results at the outset in the case of wheat, but have required time to "work." This opens up the question as to whether the "alkalinity" of the burnt lime applied has had an influence in lowering the crop yield; also a further question as to whether the changes due to the use of lime may not be of a biological, rather than of a chemical, nature. And, though the results from the use of magnesian limestone are somewhat lower than in the case of the untreated plots, the difference is not sufficient to justify the drawing of definite conclusions. Against the idea of "alkalinity" being harmful is the fact that there is no evidence of this where burnt magnesian limestone had been used.

The results, in general, point to the desirability of continuing the work for a second year or longer, and this will be done.

3. *The influence of Lime on a soil rich in Magnesia.*

An extension of previous work on the use of lime was carried out by taking a soil naturally richer in magnesia than

in lime, and by adding to it lime in increasing quantities until the amount of lime equalled that of magnesia. For this purpose, a soil from Herefordshire was taken, in which the relative proportions of lime and magnesia were:—

Lime	per cent
Magnesia	83
	2.29

Lime—as burnt (Buxton) lime—was added to the soil to make up its lime contents respectively to:—1.25 per cent., 1.50 per cent., 1.75 per cent., 2 per cent., and 2.25 per cent., the last addition effecting the equalling of the lime and magnesia in the soil. At first the untreated lots looked much the best, the additions of lime showing all the drawbacks that had been similarly noted before in connection with the addition of magnesia. In all cases, however, the addition of lime was marked by a great increase in leaf growth, and the growing period was considerably prolonged also. The threshing results are put out in the previous table (page 317).

It will be seen from these results that, consequent on the addition of lime up to 1.50 per cent., the grain was much the same as with the untreated lots, but that further additions of lime decreased the yield. In all cases alike, however, of addition of lime, the amount of straw was increased. These experiments will be continued for a further season.

4. *The influence of Magnesia on Clover and Beans.*

Magnesia having so far been used only on wheat and barley, it was decided to try its effect on clover and beans, as it was thought possible that the question of nitrogen assimilation might be affected thereby. Clover was sown on April 7 and beans on April 10, 1909, magnesia being added to the soil (one containing lime .26 per cent. and magnesia .09 per cent.) in quantity to make the soil percentages of magnesia respectively .05, .10, and .20. In each case addition of magnesia retarded the germination though not ultimately affecting the final stage. By June, however, the influence of magnesia was clearly shown in each crop, the untreated lots being much the best, while, as more magnesia was added, the crop became smaller and smaller. Along with this were noticed changes in the root growth, similar to those observed with wheat, the roots becoming more fibrous as the magnesia was increased. It was also noted that nodule formation in the case of the beans was similarly reduced.

The clover crop was cut the first time on August 12, and a second time on December 11, and the beans were reaped in autumn. The following table gives a summary of the results:—

	Weight of clover (gms.)		Weight of beans	
	1st cutting	2nd cutting	Corn	Straw
	Grammes	Grammes	Grammes	Grammes
No treatment	181.8	132.1	35.9	36.7
With magnesia added to soil, to .05 per cent.	169.1	111.4	30.8	29.4
With magnesia added to soil, to 10 per cent.	139.2	110.8	21.2	35.1
With magnesia added to soil, to 20 per cent.	61.9	74.1	6.3	19.6

From both these sets the general result is obtained that as the quantity of magnesia in the soil is increased so is the produce lowered. This is more marked in the first cutting of clover than in the second, and not so clear in the straw of the beans as in the corn.

5. Green-manuring Experiment.

The experiments of 1908 had shown that an alteration in the consolidation of the soil, produced by the addition of materials such as silicate of alumina and silicate of soda, exercised a marked influence in bringing out the benefit of the previous green-manuring. The work was continued in 1909, silicate of alumina again being used, and also clay itself, mixed with the soil. Again the beneficial influence was experienced, and the results generally tended to show that the action on the organic matter in the soil had been the main cause of increase. Analyses of the grain produced and of the soils, after the several years of green manuring, were made, but the results, while highly interesting, do not lend themselves to brief treatment such as is called for in the present summary.

6. Experiments with Nitrogenous Top-dressings.

Pot experiments were conducted in 1909 on the comparative values of sulphate of ammonia, nitrate of soda, calcium cyanamide, and nitrate of lime as top-dressings for wheat and barley. These experiments were carried on simultaneously with others on a field scale, and led to much the same conclusion, viz., that, provided the same amount of nitrogen was supplied, it was not very material in what form it was given. With wheat the percentages of corn yield, taking the "untreated" as 100, were: sulphate of ammonia, 124; nitrate of soda, 143; calcium cyanamide, 120, and nitrate of lime, 143; with barley: sulphate of ammonia, 139; nitrate of soda, 133; calcium cyanamide, 122, and nitrate of lime, 140.

7. *Experiments on the Inoculation of Crops.*

Experiments with the inoculating materials, prepared by Prof. Bottomley, were continued in 1909 on both leguminous and non-leguminous crops; wheat, barley, oats, red clover, white clover, lucerne, beans, and vetches being the crops grown. The results obtained were of a somewhat variable character, the use of the "culture solution" seeming in some cases to have effected a slight increase, and in others to have produced a decrease of crop. Taking them, as a whole, however, there was nothing to indicate an improvement from the inoculation, and this was particularly the case with the cereal crops.

J. AUGUSTUS VOELCKER.

22 Tudor Street, E C

STATISTICS AFFECTING BRITISH AGRICULTURAL INTERESTS.

THIS year the Board of Agriculture and Fisheries have most kindly supplied the Tables, which are published in this volume, in the actual form in which they are printed. For this we are very thankful as it has saved both time and labour. Further information will be published by them in the Agricultural Statistics as they appear.

ACREAGE OF CROPS.

The first Table, "Acreage under Crops and Grass and Number of Live Stock on June 4, 1910 and 1909," gives numbers for England, Wales, Scotland, Great Britain and the United Kingdom. In the past year the total acreage under Crops and Grass in the United Kingdom increased by 43,000 acres as against a decrease of 16,000 in the previous year. In Great Britain there was last year a decrease of 37,000 acres following one of 28,000 acres in the previous year.

Once again there was, however, an increase in the area devoted to Corn Crops in Great Britain. On this occasion it was one of 22,400 acres due to increases in Barley and Oats, for Wheat, Beans and Peas had diminished. In the United Kingdom the Corn Crops increased in acreage by over 71,000 acres as against 99,000 acres the year before.

Considering England alone, it appears that the total loss of acreage was 25,600, due to a loss of 36,900 in arable land partly counter-balanced by a gain of 11,400 acres in Permanent Grass. Wheat, Beans, and Peas diminished by 17,000, 44,000 and 15,000 acres respectively, while there was an increase of 70,000 acres

in **Barley**, and one of 18,000 in **Oats**. **Rye**, of which only 42,000 acres were grown, had decreased by 7,300 acres.

Taking now the Crops in England other than corn, we find that **Vetches** or **Tares** decreased by 31,800; **Clover**, **Sainfoin** and **Grasses** under rotation by 23,000; **Potatoes** by 28,700 acres, and **Mangold** by 13,500, while **Turnips** and **Swedes** increased by 8,000, and **Fallow** by 67,000 acres.

LIVE STOCK RETURNS.

In 1910 in England the increase in **Horses** used for Agricultural purposes was 4,800, whereas in 1909 there was one of 12,500, and in 1908 a decrease of 9,200. The increase last year was about 1 per cent., but unfortunately the number of unbroken horses of the same class again decreased, the loss in number last year being 8,600, or very nearly $2\frac{1}{2}$ per cent. The total number of Agricultural Horses in England last year was 1,184,072, and in the United Kingdom 2,094,587.

With **Cattle** there was last year an increase in England and decreases in the rest of the United Kingdom. In England, too, **Cows** and **Heifers** in milk and in calf decreased. On the whole there was an increase of 26,106 of cattle in England, and of 3,622 in the United Kingdom. The totals stood at 5,126,251 and 11,765,453 respectively.

In England the **Sheep** decreased last year by 221,294, or about $1\frac{1}{2}$ per cent., for they numbered 16,273,518. They also fell in numbers in the rest of the United Kingdom. **Pigs**, which showed such a falling off in 1909, again diminished last year by 25,965, or nearly $1\frac{1}{2}$ per cent., in England, while they increased by 18,150, or about one half per cent., in the United Kingdom. In England they now total 2,020,319.

PRODUCE RETURNS.

The **Wheat** crop in England this last year was rather less than the mean between those of 1908 and 1909, showing a falling off of over 618,000 quarters or 8·8 per cent. from the latter year. The produce per acre was 30·93 bushels as against 31·47 the average of the preceding ten years. In Scotland there was a similar diminution in the yield per acre while the total produce was almost the same as the year before.

The case of **Barley** in England was similar to that of **Wheat**, there being a diminution there of 292,000 quarters or 4·6 per cent., while there was also a falling off of 113,000 quarters in Scotland. In England the yield per acre, though rather below that of the year before, was above the average of the preceding ten years.

Oats, which in previous years had been diminishing in produce, showed last year an advance of 81,000 quarters, or 1·8 per cent., in England, and one of 103,000 quarters in Wales.

TABLE I.—*Acreage under Crops and Grass; and Number of and Scotland, with totals for Great Britain and for the*

	England		Wales	
	1910	1909	1910	1909
Total Area (excluding water)	Acres 32,394,303		Acres 4,749,651	
Total Acreage under Crops and Grass (a)	24,516,382	24,540,985	2,777,206	2,782,479
Arable Land	10,592,056	10,628,990	728,389	729,122
Permanent Grass (a)	13,923,327	13,911,995	2,048,817	2,053,357
Wheat	1,716,629	1,734,236	39,428	39,593
Barley or Bere	1,449,492	1,379,133	87,569	85,272
Oats	1,857,741	1,849,912	205,093	198,528
Rye	41,933	49,254	532	529
Beans	253,460	302,653	1,378	1,376
Peas	167,154	182,209	664	714
TOTAL CORN CROPS	5,491,399	5,487,387	334,664	326,002
Potatoes	376,894	405,529	26,013	26,994
Turnips and Swedes	1,064,404	1,056,823	59,494	58,219
Mangold	429,457	442,910	11,057	11,186
Cabbage	55,595	60,404	775	704
Kohl-Rabi	14,769	17,644	79	71
Rape	71,336	75,978	4,457	4,650
Vetches or Tares	95,689	127,415	621	601
Lucerne	58,136	64,908	342	385
Hops	32,888	32,589	1,013	1,198
Small Fruit	78,036	78,124		
Clover, Sanfon, and Grasses under Rotation	2,360,416	2,333,459	285,232	292,636
Other Crops	121,852	119,349	1,010	1,110
Bare Fallow	843,246	276,511	4,632	5,376
Horses used for Agricultural purposes (b)	No. 884,017	No. 879,212	No. 96,533	No. 96,795
Unbroken } One year and above	208,804	213,394	10,051	41,790
Horses } Under one year	81,451	90,121	21,074	22,048
TOTAL OF HORSES	1,184,270	1,187,870	157,737	160,633
Cows and } In milk	1,619,411	1,624,779	241,111	241,907
Heifers } In calf but not in milk	434,929	448,661	41,319	43,719
Other Cattle—Two years and above	1,025,138	989,723	85,411	82,645
" " One year and under two	1,061,988	1,018,930	182,737	181,264
" " Under one year	985,385	1,018,052	180,709	195,137
TOTAL OF CATTLE	5,126,251	5,100,145	740,317	744,672
Ewes kept for Breeding	6,140,062	6,191,525	1,537,741	1,582,187
Other Sheep—One year and above	3,338,401	3,580,904	813,702	881,761
" " Under one year	6,795,055	6,717,633	1,333,248	1,381,394
TOTAL OF SHEEP	16,273,518	16,490,062	3,684,781	3,795,342
Sows kept for Breeding	281,237	268,401	33,449	32,867
Other Pigs	1,739,082	1,777,888	162,631	171,927
TOTAL OF PIGS	2,020,319	2,046,289	196,280	204,794

(a) Not including Mountain and Heath Land.

(b) Including Mares kept for Breeding.

Live Stock, on June 1, 1910 and 1909, in England, Wales, United Kingdom.

Scotland		Great Britain		United Kingdom, including Ireland, Isle of Man, and the Channel Islands	
1910	1909	1910	1909	1910	1909
Acres 19,070,109		Acres 56,211,153		Acres 70,010,803 (c)	
4,853,312	4,850,000	32,115,930	32,183,013	40,931,637	40,868,103
3,318,140	3,372,556	11,608,800	14,720,008	10,603,821	10,457,408
1,501,800	1,487,653	17,477,010	17,462,406	27,327,816	27,430,695
51,507	40,679	1,808,851	1,823,108	1,857,071	1,808,385
191,020	190,081	1,728,081	1,004,380	1,800,130	1,829,023
958,160	913,437	3,020,971	2,081,877	4,116,137	4,038,125
5,781	5,783	48,249	56,580	57,001	63,150
10,304	9,835	270,012	313,804	271,983	315,007
910	987	108,728	183,010	160,001	181,208
1,210,465	1,200,702	7,045,528	7,023,101	8,371,016	8,200,708
136,837	142,938	530,084	675,101	1,144,405	1,167,081
412,417	410,506	1,505,345	1,555,518	1,848,919	1,840,602
2,266	2,411	412,779	456,490	618,000	530,930
5,550	5,746	61,020	66,864	102,918	215,084
32	10	14,880	17,731		
5,929	6,775	81,722	87,443		
8,204	8,229	104,004	1,002,315	107,220	138,386
27	31	56,505	65,377	32,887	32,539
7,209	7,704	32,880	32,530		
		81,300	87,116	(d) 97,711	(d) 100,145
1,511,380	1,538,480	1,157,037	4,214,575	6,070,308	6,587,040
2,610	2,636	125,072	123,001	281,816	275,826
0,132	7,251	354,010	280,141	354,472	280,385
No.	No.	No.	No.	No.	No.
160,318	160,007	1,130,915	1,132,014	1,520,803	1,512,223
13,020	34,033	282,281	204,867	385,085	394,313
13,025	13,860	120,180	120,322	188,140	185,177
203,607	204,400	1,515,376	1,552,093	2,001,587	2,001,713
301,587	305,532	2,225,100	2,232,218	4,312,180	4,300,982
60,231	60,078	612,500	601,958		
212,010	214,817	1,353,106	1,317,215		
276,037	273,721	1,510,502	1,473,918	2,543,045	2,518,711
251,858	252,481	1,306,952	1,435,073	2,510,707	2,535,610
1,170,760	1,170,105	7,037,327	7,020,982	11,706,453	11,701,880
2,087,841	2,030,704	10,605,644	10,810,176	12,281,507	12,485,803
1,335,124	1,443,542	5,487,317	5,800,807	6,297,050	6,668,400
2,821,681	2,847,650	10,940,084	10,947,036	12,615,430	12,685,437
7,144,646	7,328,205	27,102,045	27,618,419	31,104,587	31,880,700
16,792	15,204	831,478	310,552	462,480	488,005
116,655	114,625	2,018,468	2,001,335	3,008,001	3,104,426
133,347	120,810	2,340,916	2,380,887	3,561,181	3,548,331

(c) Figures for Jersey include Water.

(d) Figures for Ireland include Orchards.

TABLE II.—*Produce of Crops—Estimated Total Produce and Yield per Acre of the undermentioned Crops in Great Britain in the Year 1910, with Comparisons for 1909, and the Average Yield per Acre of the Ten Years 1900-1909.*

Crops		Estimated total produce		Acreage		Average estimated yield per acre		Average of the ten years
		1910	1909	1910	1909	1910	1909	
		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
Wheat	England . .	6,637,102	7,285,506	1,716,620	1,734,236	30.83	33.61	31.47
	Wales . .	138,911	198,980	39,428	59,575	28.19	28.09	26.01
	Scotland . .	252,953	253,811	52,797	40,679	38.33	41.19	39.24
	Great Britain	7,028,966	7,698,297	1,808,845	1,834,490	31.00	33.69	31.55
		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
Barley	England . .	6,048,726	6,340,580	1,419,492	1,379,133	33.38	30.78	33.15
	Wales . .	355,930	339,839	87,569	85,272	32.52	31.88	31.13
	Scotland . .	824,123	930,901	191,020	199,981	34.41	37.48	35.05
	Great Britain	7,228,779	7,611,320	1,728,681	1,664,396	33.45	30.61	33.34
Oats	England . .	9,844,128	9,763,873	1,867,731	1,839,012	42.39	42.45	41.84
	Wales . .	979,691	876,457	205,083	198,528	38.21	35.32	31.69
	Scotland . .	4,610,166	4,737,807	958,150	943,437	38.49	40.18	37.14
	Great Britain	15,433,985	15,378,137	3,030,974	2,981,977	40.87	41.96	39.90
Beans	England . .	1,032,877	1,070,298	268,528	301,287	32.20	28.42	29.62
	Wales . .	4,890	4,531	1,363	1,317	28.74	26.61	26.62
	Scotland . .	46,417	42,411	9,493	9,173	39.14	36.99	36.11
	Great Britain	1,083,724	1,117,180	287,384	311,806	32.43	28.68	29.33
Peas	England . .	496,588	546,004	151,823	168,673	26.17	25.90	27.25
	Wales . .	1,946	1,954	680	708	23.50	21.66	21.60
	Scotland . .	2,114	2,119	568	602	29.88	28.15	27.08
	Great Britain	500,648	550,117	153,049	169,983	26.17	25.80	27.21
		Tons	Tons	Tons	Tons	Tons	Tons	Tons
Potatoes	England . .	2,467,179	2,613,109	376,834	405,529	6.55	6.52	5.90
	Wales . .	131,680	150,398	26,013	26,091	5.06	5.57	5.02
	Scotland . .	878,300	880,916	134,837	142,938	6.12	6.16	6.20
	Great Britain	3,477,139	3,674,153	530,681	575,461	6.41	6.39	5.93
Turnips and Swedes	England . .	16,531,822	16,513,107	1,064,401	1,050,623	15.53	15.66	13.31
	Wales . .	1,061,613	996,767	58,401	58,210	17.11	16.49	16.42
	Scotland . .	8,081,008	7,620,076	412,411	416,506	18.26	17.30	16.00
	Great Britain	25,613,155	25,129,950	1,505,315	1,555,339	16.36	16.15	11.18
Mangold	England . .	9,105,171	9,310,314	420,457	412,010	21.20	21.03	20.01
	Wales . .	205,168	211,382	11,057	11,136	18.58	18.68	17.94
	Scotland . .	42,036	42,008	2,265	2,444	18.57	17.56	17.11
	Great Britain	9,352,905	9,570,604	432,779	426,490	21.12	20.97	19.97
Hay from Clover, Sainfoin, &c.	England . .	2,360,419	2,490,595	1,485,573	1,440,280	31.78	28.85	29.60
	Wales . .	274,785	192,917	189,939	170,497	27.03	22.03	21.75
	Scotland . .	669,164	652,589	419,067	415,990	31.94	31.36	32.42
	Great Britain	3,294,338	2,936,001	2,074,579	2,035,773	31.47	28.84	29.87
Hay from Permanent Grass	England . .	5,441,735	4,731,088	4,295,832	4,094,162	26.33	23.11	24.00
	Wales . .	584,988	484,087	545,109	529,587	21.46	18.31	18.48
	Scotland . .	225,589	216,585	183,503	152,965	27.59	28.32	29.65
	Great Britain	6,252,262	5,432,360	5,000,444	4,776,694	24.99	22.75	23.78

TABLE III.—*Estimated Total Production of Hops in the Years 1910 and 1909, with the Acreage and Estimated Average Yield per Statute Acre, in each County of England in which Hops were grown.*

COUNTIES	Estimated total produce		Average returned on 4th June		Estimated average yield per acre	
	1910	1909	1910	1909	1910	1909
	Owts.	Owts.	Acres	Acres	Owts.	Owts.
Kent { East . . .	40,135	31,801	5,779	5,711	8.50	6.10
Mid . . .	61,871	58,283	6,012	6,721	9.31	8.67
Went . . .	72,886	62,600	7,357	7,201	9.91	8.69
Total, Kent	186,895	155,744	20,078	19,633	9.31	7.93
Hants . . .	10,910	0,111	1,111	1,411	12.01	6.68
Hereford . . .	40,961	11,906	4,087	4,997	8.21	2.09
Surrey . . .	5,311	2,341	511	511	10.38	4.31
Sussex . . .	22,878	15,785	2,053	2,775	8.63	5.69
Worcester . . .	28,161	10,123	3,109	3,054	9.22	5.28
Other Counties ¹ . .	994	78	131	110	7.37	0.66
Total . . .	302,075	214,181	32,886	32,539	9.20	6.50

¹ Gloucester and Salop.

TABLE IV.—*Quantities and Values of Corn Imported into the United Kingdom in the undernoted Years.*

Description	Quantities			Values		
	1908	1909	1910	1908	1909	1910
	Cwt.	Cwt.	Cwt.	£	£	£
Wheat . . .	91,181,205	97,554,125	105,322,038	88,205,827	45,372,131	44,160,884
Wheat meal and flour	13,909,855	11,052,540	9,980,481	7,075,231	6,370,480	5,510,905
Barley . . .	18,137,200	21,556,470	18,281,300	6,118,945	7,143,846	5,396,076
Oats . . .	14,299,280	17,835,998	17,494,814	4,162,579	5,437,357	4,822,641
Peas . . .	1,060,999	1,814,149	1,591,111	538,813	603,054	718,740
Beans . . .	1,048,907	2,171,280	819,203	378,018	757,800	311,734
Maize . . .	83,841,000	89,362,605	87,021,192	10,388,061	12,122,812	10,294,346
Oatmeal, groats, and rolled oats	500,198	538,125	775,033	416,184	465,118	582,225
Maize meal . . .	450,410	334,140	461,624	159,484	127,751	158,963
Other kinds of corn and meal	1,618,181	1,626,296	1,740,292	682,279	677,544	645,883

TABLE V.—*Average Prices of British Corn per Imperial Quarter in England and Wales, as ascertained under the Corn Returns Act, 1882, in each Week of the Year 1910.*

Week ended	Wheat			Barley			Oats			Week ended	Wheat			Barley			Oats		
	s.	d.		s.	d.		s.	d.		s.	d.		s.	d.		s.	d.		
January 1 . . .	33	3		25	1		17	4		July 9 . . .	30	4		19	5		17	4	
January 8 . . .	33	6		24	11		17	2		July 16 . . .	31	1		21	3		17	7	
January 15 . . .	33	8		24	11		17	7		July 23 . . .	31	11		19	9		17	5	
January 22 . . .	33	9		24	11		17	6		July 30 . . .	33	5		20	10		18	1	
January 29 . . .	33	6		25	0		17	4		August 6 . . .	33	9		20	5		18	3	
February 5 . . .	33	7		24	10		17	7		August 13 . . .	33	5		20	4		18	0	
February 12 . . .	33	4		24	9		17	11		August 20 . . .	32	11		20	11		17	11	
February 19 . . .	33	0		24	6		18	0		August 27 . . .	32	7		20	10		17	2	
February 26 . . .	32	7		24	2		17	10		September 3 . . .	32	2		22	10		17	2	
March 5 . . .	32	7		24	6		18	1		September 10 . . .	31	11		23	3		17	2	
March 12 . . .	32	6		24	1		18	0		September 17 . . .	30	11		24	3		16	6	
March 19 . . .	32	6		23	6		18	0		September 24 . . .	30	2		24	2		16	3	
March 26 . . .	32	9		23	7		17	11		October 1 . . .	30	1		24	4		16	4	
April 2 . . .	33	0		23	8		14	0		October 8 . . .	30	1		24	7		16	3	
April 9 . . .	33	6		23	1		17	11		October 15 . . .	30	2		25	1		16	2	
April 16 . . .	33	7		23	5		18	3		October 22 . . .	30	4		25	3		16	1	
April 23 . . .	33	7		23	0		18	3		October 29 . . .	30	4		25	4		16	2	
April 30 . . .	33	0		22	10		18	3		November 5 . . .	30	4		25	6		16	2	
May 7 . . .	32	6		22	7		18	2		November 12 . . .	29	11		25	4		15	11	
May 14 . . .	32	1		22	0		18	1		November 19 . . .	29	8		25	1		16	1	
May 21 . . .	31	10		21	8		17	8		November 26 . . .	29	11		24	10		16	4	
May 28 . . .	31	3		21	4		17	10		December 3 . . .	30	6		24	7		16	7	
June 4 . . .	30	2		21	8		17	10		December 10 . . .	30	9		24	3		16	0	
June 11 . . .	29	1		20	9		17	10		December 17 . . .	30	7		23	9		16	10	
June 18 . . .	29	0		18	11		18	0		December 24 . . .	30	7		23	10		16	9	
June 25 . . .	29	4		20	1		17	9		December 31 . . .	30	5		23	9		16	9	
July 2 . . .	29	9		19	11		17	7											
										Average of year . . .	31	8		23	1		17	4	

TABLE VI.—*Annual Average Prices per Quarter and total Quantities of British Corn sold in the Towns in England and Wales making Returns under the Corn Returns Act, 1882, in the Year 1910.*

Year	Wheat		Barley		Oats		Wheat		Barley		Oats	
	s.	d.	s.	d.	s.	d.	Qrs.		Qrs.		Qrs.	
1910	31	8	23	1	17	1	3,072,523		3,205,203		791,121	

TABLE VII.—*Annual and Septennial Average Prices per Bushel of British Corn in the Year 1910, with the Value of 100l. of Tithe Rent-charge.*

Year	Annual average price			Septennial average price			Value of tithe rent-charge of 100l.					
	Wheat		Oats	Wheat		Oats	Calculated on annual average			Calculated on septennial average		
	s.	d.		s.	d.		£	s.	d.	£	s.	d.
1910	3	11½	2	3	10½	2	69	5	3½	71	4	1½

TABLE VIII.—Average Prices of Fat Cattle per cwt. (Live Weight) at the undermentioned places in England and Scotland, in each Year from 1903 to 1910 inclusive, together with the Average Prices for England, Scotland and Great Britain, compiled from the Returns received under the Markets and Fairs (Weighing of Cattle) Act, 1891.

Places	1903	1904	1905	1906	1907	1908	1909	1910
	s d	s d	s d	s d	s d	s d	s d	s d
ENGLAND								
Carlisle	33 0	31 11	31 6	31 6	32 6	32 2	33 0	33 11
Leeds	31 4	33 4	32 11	33 0	33 2	33 6	31 7	30 3
Leicester	33 6	32 2	32 9	31 11	32 6	31 2	31 1	37 1
Liverpool	32 8	32 1	31 3	30 10	32 6	33 7	31 2	31 5
London	36 1	35 6	35 4	31 10	35 9	36 8	37 7	39 1
Newcastle	37 0	36 2	34 8	35 1	36 1	37 1	37 5	38 9
Shrewsbury	33 6	31 9	31 6	31 3	33 1	35 0	35 0	36 0
SCOTLAND								
Aberdeen	33 4	32 8	32 6	32 5	32 8	36 0	34 5	35 10
Dundee	33 3	32 7	32 0	31 11	32 8	33 6	31 0	35 8
Edinburgh	35 5	31 10	33 10	34 2	36 1	36 6	37 2	38 7
Glasgow	36 3	35 8	32 6	32 5	31 1	31 3	31 10	36 2
Perth	35 1	33 3	31 4	34 0	35 8	37 0	37 11	40 3
England	34 1	33 1	32 8	32 6	33 6	31 2	31 8	36 0
Scotland	34 6	33 9	33 0	33 0	33 9	34 8	35 6	37 2
Great Britain	34 4	33 7	32 11	32 11	33 8	31 7	35 4	36 11

TABLE IX.—Average Prices of Wool in each Year from 1890 to 1910 inclusive.

Year	BRITISH				AUSTRALIAN	NEW ZEALAND	SOUTH AFRICAN
	Leicester ¹	Half-breds ¹	Southdown ¹	Lincoln ²			
	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.
	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.	d. d.
1890	10 to 10½	10½ to 11½	11 to 13	11	11	10½	10½
1891	9½ " 10	10 " 10½	10½ " 13	9½	9½	9½	9½
1892	8½ " 9	9½ " 10½	10½ " 12½	8½	8½	9½	9½
1893	8½ " 9½	9½ " 10½	10½ " 12	10½	8½	9½	9½
1894	9 " 10	9½ " 10½	9½ " 12	10½	8½	9	9½
1895	9½ " 10½	9½ " 11	9½ " 11½	12	8	8½	9½
1896	9½ " 11	9½ " 10½	9½ " 11½	11½	8½	8½	7½
1897	8½ " 10	8½ " 9½	8½ " 10½	9½	8	8½	7½
1898	8 " 8½	7½ " 8½	8½ " 9½	8½	8½	8½	7½
1899	7 " 8	7 " 8½	7½ " 11	8½	9½	8	7½
1900	6½ " 7½	6½ " 8½	8 " 12	7½	11	8½	8½
1901	5½ " 6	5½ " 9½	7½ " 9½	6½	8½	6½	7½
1902	5 " 5½	5½ " 6½	7½ " 9½	6½	8½	6½	7½
1903	6½ " 6½	7½ " 8	8½ " 11½	7½	9½	7½	7½
1904	8½ " 9½	9½ " 10½	9½ " 11½	10½	10	8½	7½
1905	11½ " 12	11½ " 12½	11½ " 13½	12½	10½	9½	7½
1906	12½ " 13	13½ " 14½	14½ " 15½	14½	11	11½	8½
1907	12½ " 12½	12½ " 13½	13½ " 15	12½	10½	11½	8½
1908	8½ " 8½	8½ " 10	11½ " 12½	8½	10	8½	8½
1909	8½ " 8½	10 " 11½	12½ " 13½	8½	10½	9½	8½
1910	9½ " 9½	11½ " 12½	14 " 15	9½	10½	10½	9

¹ Computed from the prices given in *The Economist* newspaper.
² Extracted from *The Yorkshire Daily Observer* Wool Tables.
³ Computed from the Trade Returns.

[Continued from page 351]

Throughout Great Britain the yield per acre was above the average of the preceding ten years.

With Beans there was last year a decrease in production of about $3\frac{1}{2}$ per cent. in England, where the vast bulk of this crop is grown. Peas, which are practically confined to England, diminished in produce by over 9 per cent.

The produce of Potatoes again fell off in England. Last year the decrease there was 6.6 per cent., but the yield per acre was slightly better than in the year before and was well above the average of the preceding ten years. In Wales there was a large decrease both in the total and in the yield per acre, and in Scotland the produce per acre increased while the total remained about the same.

Turnips and Swedes gave nearly the same total as in 1909 in England where, however, the yield per acre fell about two-thirds per cent. In Wales and Scotland the total produce and yield per acre both increased. Throughout Great Britain the yield per acre was well above the average of the preceding ten years.

Mangolds showed a total diminution of 218,000 tons, mostly in England where the vast bulk of this crop is grown. The produce per acre was, however, nearly one per cent. above that of the previous year and $5\frac{1}{2}$ per cent. above the average of the preceding ten years.

The produce of Hops was everywhere much greater, both in total and in yield per acre, than in the previous year. In Hants, Hereford, and Surrey the increase per acre was very great, while in East Kent it was considerable. Nowhere, however, was the yield up to that of previous recent years.

Hay, both that from Clover, Sainfoin, &c., and that from Permanent Grass, showed increases both in totals and in yield per acre throughout Great Britain, except in the case of yield per acre of Hay from Permanent Grass in Scotland where there was a decrease. In England the yield per acre of the first sort of Hay was 6 per cent. above the average of the preceding ten years, while with Hay from Permanent Grass it was 5 per cent. above it.

THE WEATHER OF THE PAST AGRICULTURAL YEAR.

THE farmer appears to have received scanty encouragement last year from the clerk of the weather. The autumn of 1909 was, in the first instance, cold, and, in the south of England, very rainy, so that the agricultural season started none too well. The winter, which was marked by extreme changeability, was followed, it is true, by a more favourable spring, the weather of the latter season assisting very materially in

steady plant growth, and thus atoning in a large measure for the mischievous effects of the wet autumn, and the numerous meteorological vicissitudes of the winter. The summer, although much finer in the northern than in the southern parts of England, was upon the whole extremely cloudy and cool, and with such conditions it was surprising to find that the crops ripened so well, and promised such an abundant yield. In many localities, however, the appearances proved to be not a little deceptive, the results of the threshing showing a much poorer return than might have been expected from the outward appearance of the grain. The fine weather of September was favourable for the clearing of the land and for ploughing and other farm work, but for the remainder of last autumn the weather was not propitious, the frequent heavy rains and the low temperatures of November being unfavourable for the formation of a healthy and vigorous seed bed. The leading features in the weather of the four meteorological seasons of last year were as follows:—

The Winter of 1909-10 was marked by extremely changeable weather, with frequent gales and heavy rains, occasional falls of snow, and rapid fluctuations in temperature. Over England the mean temperature of the season was above the average, the mildest periods occurring respectively in the second week of December, in the last week of that month and the first fortnight in the new year, and in the first week in February. The sharpest frosts of the season occurred respectively just before Christmas and in the closing week in January. Between December 20 and 22 the sheltered thermometer fell to 15° or less in many parts of the country, and to 10° or less at several places in the west and north. On the surface of the ground the exposed thermometer at Worksop sank on the morning of the 21st to 7° below zero. Between January 26 and 28 the sheltered thermometer again fell below 15° in many places, and below 10° at some stations in the north and north-west. At Buxton a reading as low as 1° was registered in the screen, and a reading of 9° below zero on the surface of the grass. Throughout the winter rainy days were unusually numerous and the total precipitation largely in excess of the average, the excess amounting to as much as 55 per cent. in the south-west of England, to 40 per cent. in the east, and to 37 per cent. in the south-east. Snow was rare, the principal falls occurring with a south-easterly gale which sprang up on December 21 and 22. As is usually the case in a wet stormy winter, when the clouds are so frequently driven away by high winds, the amount of bright sunshine was largely in excess of the average in all districts, and especially in the south-east of England.

The Spring of 1910 opened well, but deteriorated as time

[Continued on page 260]

**Rainfall, Temperature, and Bright Sunshine experienced over
England and Wales during the whole of 1910, with Average
and Extreme Values for Previous Years.**

Districts	RAINFALL							
	TOTAL FALL				NO. OF DAYS WITH RAIN			
	For 44 years, 1866-1909				For 29 years, 1881-1909			
	In 1910	Aver- age	Extremes		In 1910	Aver- age	Extremes	
			Driest	Wettest			Driest	Wettest
North-eastern	In. 25.2	In. 25.6	In. 19.9 (1884)	In. 37.2 (1872)	194	186	182 (1884)	208 (1894)
Eastern	27.4	24.9	19.1 (1874 and 1887)	33.1 (1872)	199	180	156 (1898)	205 (1894)
Midland	30.9	27.8	19.2 (1887)	39.8 (1872)	199	179	148 (1887)	210 (1882)
South-eastern	32.0	28.9	21.5 (1887)	41.7 (1872)	195	173	137 (1899)	197 (1882 and 1903)
North-western with North Wales	39.0	37.8	24.9 (1887)	58.2 (1872)	222	200	163 (1887)	228 (1903)
South-western with South Wales								
Channel Islands	41.8	32.1	26.2 (1887)	59.5 (1882)	223	210	169 (1899)	251 (1886)

Districts	MEAN TEMPERATURE				HOURS OF BRIGHT SUNSHINE			
	For 44 years, 1866-1909				For 29 years, 1881-1909			
	In 1910	Aver- age	Extremes		In 1910	Aver- age	Extremes	
			Coldest	Warmest			Cloudiest	Sunniest
North-eastern	° 47.6	° 47.5	° 44.8 (1879)	° 49.0 (1898)	1360	1333	1006 (1885)	1801 (1906)
Eastern	48.0	48.6	45.6 (1879)	49.8 (1868 and 1898)	1474	1587	1267 (1888)	1864 (1899)
Midland	48.2	48.4	45.6 (1879)	51.1 (1868)	1332	1408	1173 (1888)	1715 (1893)
South-eastern	49.6	49.6	46.7 (1879)	51.4 (1898)	1533	1616	1245 (1888)	1983 (1899)
North-western with North Wales	48.2	48.5	45.7 (1879)	50.3 (1868)	1444	1597	1198 (1888)	1683 (1901)
South-western with South Wales								
Channel Islands	52.0	52.2	50.5 (1885)	54.1 (1899)	1738	1899	1710 (1888)	2300 (1893)

NOTE.—The above Table is compiled from information given in the Weekly Weather Report of the Meteorological Office.

! For the Channel Islands the "Averages" and "Extremes" of Rainfall and Mean Temperature are for the twenty-nine years, 1881-1909.

The Rainfall of 1910 and of the previous Ten Years, with the Average Annual Fall for a long period, as observed at thirty-eight stations situated in various parts of the United Kingdom.

Stations	1910		Rainfall of Previous Years										Average long- period rain- fall
	Total in fall	Dif- ference from average	1900	1908	1907	1906	1905	1901	1903	1902	1901	1900	
ENGLAND AND WALES:													
Durham	In. 219	Per cent. 8	In. 218	In. 10.4	In. 218	In. 23.8	In. 10.2	In. 10.0	In. 30.8	In. 18.5	In. 22.9	In. 28.8	In. 37.2
York	246	3	218	218	35.6	22.8	20.7	20.8	30.3	18.7	20.5	25.8	28.3
Hillington	33.4	+21	31.6	26.5	25.7	31.0	22.7	25.7	37.6	36.2	24.4	32.6	27.6
Yarmouth	28.5	+13	21.2	22.5	21.9	28.0	22.6	21.0	25.1	21.4	21.2	21.7	25.3
Cambridge	22.8	0	23.1	17.6	21.2	22.4	19.0	17.6	30.5	15.8	10.7	10.7	22.7
Rothamsted	20.7	-6	20.8	23.4	25.3	20.8	21.8	23.2	30.3	19.6	21.1	27.1	27.9
Nottingham	21.7	0	25.2	21.3	23.5	21.8	18.0	20.0	32.2	21.5	20.4	24.5	24.8
Chowilla	30.5	+11	37.7	33.3	31.9	31.3	20.7	20.3	30.2	20.4	27.7	27.5	32.8
Hereford	38.1	+35	21.0	23.9	20.7	23.6	21.0	25.0	37.8	21.3	25.2	32.8	27.0
Cirencester	33.2	+8	32.1	21.5	28.9	20.2	25.1	28.8	41.1	25.1	20.1	31.0	30.7
Oxford	28.9	+16	27.5	23.9	20.9	24.0	21.0	22.7	35.9	16.7	22.3	23.0	25.0
London	23.1	4	24.9	21.3	19.5	23.2	23.0	20.2	38.0	20.1	21.5	22.2	21.4
Hastings	28.0	-1	31.1	22.0	22.3	28.7	20.9	21.6	32.3	23.0	19.4	20.8	20.1
Southampton	23.6	+0	38.1	27.8	20.8	33.1	20.2	31.0	43.2	27.4	28.3	31.0	30.9
Stonyhurst	53.3	+11	48.8	48.3	50.0	40.7	38.8	30.6	59.9	30.8	30.0	48.3	48.8
Manchester (Frostw'gh)	40.0	+8	41.2	37.7	19.4	42.2	33.3	32.0	45.2	20.5	33.3	42.8	37.0
Liverpool	28.0	-1	28.4	28.9	30.6	26.1	21.0	25.1	34.1	25.0	25.1	31.0	28.8
Llandudno	30.7	+10	32.0	30.8	20.3	31.0	28.1	26.0	38.5	25.0	28.7	32.8	30.8
Pembroke	38.9	+11	33.1	34.5	37.2	42.6	38.2	31.8	46.8	30.9	33.0	40.0	35.1
Ollifton	42.4	+23	30.8	20.0	34.3	30.1	26.0	30.9	42.8	28.5	20.0	31.7	34.0
Cullompton	46.8	+31	31.1	27.5	33.4	33.9	28.1	31.9	42.7	30.8	31.1	35.6	35.7
Plymouth	41.3	+23	31.2	31.0	36.3	33.4	30.5	41.1	15.8	30.0	33.0	40.3	35.9
Selly (St. Mary's)	30.6	+9	27.0	21.7	20.3	20.8	27.5	31.1	30.9	25.3	32.6	34.1	33.0
Jersey (St. Aubin's)	44.1	+30	31.7	25.2	28.6	20.2	30.3	37.3	38.2	30.4	28.6	34.6	34.2
Mean for the whole of England and Wales	34.5	+11	31.3	20.6	20.9	20.9	25.0	28.0	37.5	26.7	27.4	32.3	31.0
SCOTLAND:													
Stornoway	53.0	+9	46.2	52.6	43.8	42.2	50.7	55.7	62.1	46.3	42.8	62.5	48.6
Wick	33.5	+11	33.6	32.0	20.6	33.2	32.3	25.5	35.0	20.4	32.1	38.1	20.3
Aberdeen	27.7	10	30.1	28.0	28.7	31.5	28.5	25.7	30.3	27.3	28.0	31.0	30.7
Balmoral	37.5	+4	30.8	26.2	31.8	30.1	35.6	21.9	41.1	31.8	31.4	40.5	36.0
Leith	28.8	+8	27.1	22.1	30.7	30.2	19.2	23.4	30.9	10.1	22.5	31.2	28.8
Marholm	28.8	16	34.2	30.7	33.3	38.9	27.4	20.1	38.0	21.4	27.2	43.8	34.4
Fort Augustus	42.1	5	37.4	43.9	42.0	51.6	43.6	41.4	60.0	35.0	30.9	50.5	44.6
Glasgow	30.2	+1	30.3	35.8	42.8	40.1	30.7	33.7	53.3	20.1	32.9	47.0	38.7
Mean for the whole of Scotland	43.2	+3	41.8	43.1	41.5	40.3	41.4	42.1	57.1	45.0	40.8	52.2	41.8
IRELAND:													
Belfast	40.6	+21	35.7	38.7	38.1	30.2	31.8	31.8	42.3	35.8	32.1	40.6	35.6
Marine Castle	58.5	+27	40.7	47.3	45.2	41.6	39.0	44.0	54.1	38.4	44.0	45.3	42.0
Arranagh	32.5	+2	28.9	33.1	31.6	30.1	28.9	30.9	36.3	31.7	32.1	30.4	31.9
Dublin	35.4	+26	26.9	23.8	27.0	22.8	20.3	22.2	31.6	20.4	20.1	34.8	26.0
Birr (Castle Parsons- town)	34.2	+4	29.6	33.4	33.9	32.6	25.7	32.9	40.8	38.2	31.1	38.5	38.0
Kilkenny	37.4	+13	30.1	33.5	32.4	28.7	25.0	31.5	42.0	33.1	30.3	30.2	38.8
Mean for the whole of Ireland.	41.0	+4	35.3	39.2	39.7	36.7	34.6	38.9	47.9	37.2	37.7	44.9	39.5

¹ The Average Fall is in nearly all cases deduced from observations extending over the thirty-five years 1871-1905.

² The Mean Rainfall for each country is based upon observations made at a large number of stations in addition to those given above.

³ The figures for the years prior to 1906 are for Braemar, which ceased reporting after 1905.

[Continued from page 350]

went on. March was upon the whole mild and dry, with a striking absence of night frosts. Very little rain fell in the earlier half of the month, and from the middle until about April 3 an absolute drought prevailed over a large portion of England. With the advance of April the weather assumed a typically showery character, and became also very cold, with occasional falls of hail, sleet, or snow. In the shade the thermometer in April seldom touched 60° in any part of the country, but on the 21st it rose to 65° or a little higher in the south-east of England. The earlier half of May was also cold and inclement, with sharp frosts in many places on the 3rd and between the 9th and 11th, and frequent showers of hail or sleet. After the middle of the month the conditions became more reasonable, the thermometer rising between the 20th and 24th to 75° and upwards in many places, and to 80° or a trifle above it in some parts of Norfolk and Lincolnshire. Over the country generally the mean temperature of the spring differed but little from the average, but in the north-east of England the season was warmer than usual. Rainfall was below the normal in all the western and central districts, but above it in the eastern and south-eastern counties. The total amount of bright sunshine was generally in excess of the average.

The Summer of 1910 varied greatly in character in different parts of the country. Over eastern, central, and southern England it was mainly cool and very cloudy, but in the west and north the conditions were much finer, and in the northern parts of Ireland and Scotland the amount of bright sunshine was in excess of the average. June was not without seasonable warmth, the thermometer rising above 80° in many English districts between the 7th and 9th, and again on the 19th and 20th. The month was, however, characterised by numerous thunderstorms, accompanied in many instances by very heavy falls of rain. Between the 5th and 9th tremendous downpours occurred in several parts of southern England, West Salisbury experiencing as much as three and a half inches of rain on the night of the 5th, and Reading and Wheatley, Oxford, no less than five and a half inches on the 9th. Over the entire south-eastern quarter of England July was almost continuously cloudy and cool, the rainfall being, however, less heavy than in June. In the west and north a heavy downpour on the 5th was succeeded by nearly a fortnight of fine sunny weather, but after the 19th the conditions became unsettled over the whole country, with heavy rain on the 20th in Wales and the north-west of England. August was characterised by an almost complete absence of seasonable warmth, the thermometer seldom rising as high as 75° in any part of England. Heavy falls of rain were experienced on the

18th in many western districts, and on the 28th in Wales and the north of England, but over southern and eastern England the month, though again very cloudy, was upon the whole somewhat dry. The mean temperature of the summer was below the average, and the total rainfall in excess of the normal, but in the east and north-east of England the excess was small. In the south-western district 32 per cent. more than the average quantity was collected. Bright sunshine was deficient, especially in our eastern and south-eastern counties, where the total registration amounted to little more than three-fourths of the average.

The Autumn of 1910 opened with a late amends for the unsettled weather of the summer, the month of September being in many places the driest experienced for at least forty years past. The sky was, however, usually cloudy, and the thermometer failed therefore to rise to any very high level, the warmest weather occurring between the 27th and 29th, when shade readings of 75° and upwards were recorded at many stations in the east of England. October and November were both remarkable, the one for a singular absence of autumnal cold, the other for an equally striking absence of warmth. A westerly gale of considerable severity swept over the south of England on October 2, but in the earlier part of the month the weather was, with that exception, fair and quiet, and on the 1st and 2nd the thermometer rose above 70° in many parts of England and Wales. In the latter half of the period the conditions were more disturbed, and between the 18th and 20th some very heavy falls of rain were experienced, especially in Kent, where the amount on the 20th ranged between an inch and a half and two inches and a half. November was throughout very stormy and unsettled, with frequent heavy falls of rain, snow showers in most northern districts, and a few very slight falls of snow even in the south. A gale of considerable severity occurred on the 6th and 7th, and gales of moderate strength at many other times during the month, the weather being almost continuously cold and inclement. The sharpest frost occurred between the 20th and 23rd, when the sheltered thermometer fell below 20° in many parts of England and below 15° at inland stations in Scotland. The mean temperature of the autumn was in most districts a little below the average, with an excess of rain over eastern, central, and southern England, but a rather large deficiency in some of the more northern districts. The duration of bright sunshine agreed very closely with the average in the north-eastern and south-western districts and exceeded it in the north-west. Over our eastern and midland counties the aggregate amount was small.

FREDERICK J. BRODIE.

12 Patten Road,
Wandsworth Common.

NOTES, COMMUNICATIONS AND REVIEWS.

The Dual Purpose Cow at Liverpool.—The Britisher's love of sport has encouraged the production of a type of horse which, though, owing to his being able to gallop, jump, and stay, he is called a hunter, yet is of no definite breed. No one who knows England questions the prominent part played by this wonderful animal in our national country life. Visitors to the "Royal" at Liverpool could see an animal which, though of the bovine race, owes its origin to a similar instinct. The north countryman's love of sport, combined with his keen business spirit, has led him to create a dual purpose cow, with which he both satisfies his desire for a sporting competition and is able to put by an honest penny.

The prizes given by the Liverpool and District Cowkeepers' Association brought out, in the class for dairy cows "over 11 cwt. live weight," over a dozen animals weighing from 11 to 15 cwt. which, as combined milk and beef producers, might probably be matched successfully against any other, pedigree or non-pedigree, cows in the world. Any attentive listener at the ring side would have quickly learned what an intense interest the hardy northern farmer and his friends take in these wonderful beasts. To a whole section of this community the points and performances of the various animals competing were the subjects of enthusiastic discussion; the awards of the judges being talked over and criticised in the manner of the true connoisseur.

Throughout the western half of northern England agricultural societies are both numerous and prosperous, and very many of them look to the classes for dairy cows as their chief draw. It is disappointing after seeing what is done in the north-west to note how little support is given to such classes in the south-east of England. The animals that have been referred to as arousing such interest have a three-fold duty to perform. For the first few years of their lives they have to grow large and to reproduce themselves. The male progeny are steered and are well and favourably known over all the "feeding" parts of England as "north country stores."

During this time, which generally lasts till the advent of the fourth and sometimes till that of the sixth calf, the dual purpose animal is truly a "dairy" cow. For, to pay for her keep while she is growing large enough for her future duties, her milk is skimmed or separated, the cream being made into butter and the "skim" milk, often after "scalding," is used to

rear heifer and "store" calves. From this life on the peaceful dale pastures of Lancashire, the West Riding, or Westmorland, she goes to one of the cow-keeping farmers who practice almost in the suburbs of some large manufacturing city. Here she is fed prodigiously fed as compared with, say, the cheese-making cow of a southern grass county and is expected to yield some eight hundred or thousand gallons of milk, and to be ready for the butcher when dry after some nine to eleven months' milking. She is also expected to "die well" and will yield from 90 to 120 stone (8 lbs.) of very excellent cow beef, such beef as would gladden the hearts of the many who are not familiar with the best beef of "Old England."

In the very heart of suburban Liverpool are to be found very many cow-houses, so wonderfully sanitary and so admirably kept that this city may well claim to have the best urban milk supply in the world. Each of these cow-houses holds some twenty to thirty of the wonderful animals about which we are writing, and, though an *occasional* "polley," "blue-grey," or even a "white-face" may be seen, the majority of cattle are "shorthorns" in character.

Two distinct types are to be found. One of these, though finer in the chine and immensely superior in the "bag," is very similar to the "show" animal of Coates' Herd Book. Mossy in coat, somewhat thick in the hide, heavy in flesh—sometimes even patchy to a certain extent—there is no mistaking the presence of Booth, Bates, and no doubt a little Cruikshank blood, in these animals which are very often a rich roun in colour.

The other type, though distinctly shorthorn, is less so than the first one. Finer of skin, hair, and horn, more slender of frame, often red and white in colour, she is decidedly more dairy-like in character. We learnt that not infrequently cows of this description were obtained from Ireland. In the course of many most interesting conversations with the owners of these animals we were unable to gather that either of the two classes milked better than the other and unfortunately accurate records are seldom kept. We found, however, that there was a distinct consensus of opinion that the cows of the type first described "died best."

It would be altogether ungracious to bring this communication to a conclusion without thanking Mr. T. Backhouse, Steward of the Liverpool and District Cow-Keepers' Association, for so kindly arranging, for the purpose of this "Note," our visit to the admirable cow-houses referred to above, and as regards the owners of these establishments, we can only say that their reception of us was typical of North Country hospitality.

K. J. J. M.

The Physiology of Reproduction.—In this work the author, Dr. F. H. A. Marshall, has gathered together and set out the results, not only of his own research, which is of world-wide renown, but also of that of practically every other authority who has investigated the subtle processes by which, in the animal kingdom, matter is endowed with that mysterious something we know as life. Dr. Marshall, in the beginning of his book, tells of all that is known about the physiological action which takes place in the reproduction of the protozoa—those single-celled creatures more like animated specks of jelly than what the ordinary man would call an animal.

The author then carries his readers on through the mysteries of conception, foetal development, and birth in the various species of the higher animals, and finally treats of the various reasons why the more commercially valuable creatures and man himself may fail to procreate. In the treatment of this stupendous subject, the writer not only displays a very complete and highly specialised knowledge, but further gives evidence of that genuine scientific state of mind which enables one to tell the whole truth without leaving the slightest impression that ignorance of this often veiled subject is in any way preferable to the fullest and most exact knowledge. Unfortunately the nature of the work entails an abundance of detail which must, we fear, detract somewhat from its popularity among a large class of farmers.

A close study, however, of the book—it would be a great injustice to Dr. Marshall to pretend that his work demands anything less—shows that some of the matter is of vast importance to the cattle breeder. Fortunately for some years this author, who, by the way, has contributed to this Journal, has devoted much time to the investigation of certain of the problems that arise in farm practice and we take this opportunity to express an earnest hope that he may be induced, now that he has this larger work off his hands, to write a handbook on the subject specially for the use of the agriculturist. Such a work would undoubtedly be valuable to the agricultural student, who, as we hope, is the future farmer, as well as to any intelligent breeder who may wish to understand what obstacles have to be overcome by nature in the reproduction of animals rendered somewhat abnormal by domesticity.

The Norfolk Experimental Farm.—Nineteen hundred and eleven being a Norfolk year with the *Society*, it is requisite in

¹ *The Physiology of Reproduction*, by F. H. A. Marshall, M.A., D.Sc., University Lecturer in Agricultural Physiology, Cambridge, with a Preface by Professor E. A. Schäfer, Sc.D., F.R.S., and Contributions by W. Cramer, D.Sc., and J. Loshhead, M.D., with 154 illustrations. London, New York, Bombay, and Calcutta: Longmans, Green and Co. 706 pp. Price 21/- net.

this number of the Journal to take particular notice of the good example set by the agriculturists of that county. Without any aid from public funds, local or imperial, the landowners and farmers in general have established a fully equipped farm for the purpose of experiment and research. Among these enterprising gentlemen we must specially refer to Mr. Saneroff Holmes, who has been indefatigable in advancing the cause, and it is not too much to say that without his determined effort little could have been accomplished. On the holding which has been acquired very valuable and interesting work can be carried out.

The agriculturists themselves are the proprietors and consequently have the greatest interest in the concern. There being no *lay public* to worry the authorities for hurried results and hasty reports, the investigations can be carried on with patience and perseverance. Any mistakes that occur, being made by the practical agriculturist and not by some unhappy official, will be taken to heart and the lessons from them more thoroughly learnt. Furthermore the interest aroused by the pride of proprietorship must lead to the work being more thoroughly studied and to the results obtained being more thoroughly known. An active member of the Committee has favoured us with the following account.

"On the occasion of the annual show of the Norfolk Agricultural Association in 1906, attention was drawn by one of the speakers at the luncheon to the fact that whilst the Association had been eminently successful in promoting the interests of breeders of first class stock, in securing magnificent exhibits of machinery, and in accumulating a handsome sum as a reserve fund, it had in his opinion not exhausted all its opportunities of usefulness. Something he suggested should be done in the interests of the small farmer to bring the expert knowledge of the few, and mainly the larger farmers, to the great majority of the farming community, who could not afford to be exhibitors, and who had little if any knowledge of science, or modern research; he further suggested that some of the surplus funds of the Association might advantageously be applied with the object of establishing an agricultural bureau and office of information, available to the whole county. The idea was warmly supported by the Press; the Agricultural Department at Cambridge gave valuable advice; the Board of Agriculture sympathy; the general public expressed criticism, not to say marked scepticism as to its usefulness. At a county meeting convened to consider the matter in March, 1908, a scheme for the establishment in Norfolk of an agricultural station and bureau was approved. It was then pointed out that in that

“county there was an expenditure on agricultural education
“of 1,500*l.* a year, divided between horticulture, farriery,
“manual processes, dairying and poultry, and including 200*l.*
“paid to Cambridge, and 150*l.* share of county agricultural
“scholarships, the total sum being small in comparison with
“the enormous importance of agriculture in a county such
“as Norfolk. It was stated that the proposed station was
“being started in the hope that it might be used to demon-
“strate the practical usefulness of experiments which Cam-
“bridge had proved to be worthy of a trial; it was to be an
“adjunct to and under the supervision of Cambridge University
“Department of Agriculture, the management to be provided
“for by a committee of landlords, tenant farmers, and repre-
“sentatives of Cambridge. The hope was expressed that a
“suitable farm, rent free, would be provided, that a sufficient
“sum to stock the farm, 1,500*l.*, would be met by voluntary
“subscription, and that the Norfolk Education Authority would
“make a grant of 300*l.* a year, to provide for the salary of
“a scientific expert

“The result of the meeting was, that a farm of 132 acres,
“with farmhouse and suitable buildings, was very generously
“given rent free for eight years by Lord Hastings; a sum
“approaching 1,300*l.* was raised by subscription, headed by
“the Lord Lieutenant with a gift of 100*l.*, while a short time
“subsequently his late Majesty King Edward VII. sent a
“donation of twenty-five guineas, and with it a message, ‘that
“he very gladly supported the scheme, the success of which
“had his best wishes.’

“The Norfolk County Council, upon being asked to endorse
“the recommendation of their Education Committee, and to
“make a grant of 300*l.* a year to the proposed station, voted
“27 for and 27 against the motion; the matter was then
“dropped and has not since been taken into consideration.

“At Michaelmas, 1908, the farm at Little Snoring, near
“Fakenham, was taken over; two well-known typical West
“Norfolk farmers kindly undertaking the stocking and culti-
“vation, and reporting to a small executive committee at
“Norwich. Once every year when harvest is approaching,
“all the subscribers, and any farmers or others who may be
“interested, are invited to visit the farm, an opportunity of
“which some 120 availed themselves last year.

“Failing to obtain any financial assistance from outside, a
“further appeal was made for annual subscriptions, to help
“meet the cost of management, and a sum of nearly 100*l.* a
“year has been provided in this way.

“At the second annual meeting held in January, 1911,
“Professor T. B. Wood presented a most valuable report on

"the result of the first two years' working; this has been
"circulated amongst all the subscribers, and besides has been
"widely made known by the *Eastern Daily Press*, warm
"supporters of the scheme, and by other local papers. In
"dealing with cereals, the report states the value of breed
"in cereals has been brought very prominently before farmers,
"and the Committee have devoted some considerable attention
"to the subject. They consider that in no way can the station
"better assist the farmers of the county than by trying all the
"new varieties of cereals which are now being produced, and
"by growing those which appear to be most suitable to the
"district, for distribution to subscribers and others.

"Bullock-feeding experiments have been carried out during
"the last year, so as to test the relative values of linseed and
"soya cake, rich and poor farmyard manure, and the relative
"economy of high cake and low cake feeding. The results
"obtained are most valuable and are to be followed up in the
"future, the experience of one years' experiment not being
"regarded as of such a sufficiently reliable character as to
"justify a definite opinion being expressed.

"Mr. K. J. J. Mackenzie has rendered the station valuable
"service by a careful investigation of the rather varied
"character of the soil on the farm, and in preparing the
"scheme for the carrying out of the experiments.

"Application has been made to the Development Com-
"mission for a grant to enable the station to secure the
"services of a fully qualified expert working under the
"direction of Cambridge. If this is successful the usefulness
"of the station will be largely increased, and the service of
"the expert will be available for all Norfolk agriculturists who
"require advice and information.

"The well-established reputation of Norfolk agriculture,
"the enterprise and resource shown by its farmers in meeting
"adverse times, the revival of its industry under recently
"improved conditions, the very large demand which has arisen
"for small holdings, and which has been generously met by
"the County Council, all go to prove the necessity which now
"exists of doing everything possible to help forward its great
"agricultural interest, in its increasingly severe competition
"with the markets of the whole world.

"The station, started by one county upon a purely volun-
"tary basis, the only one so started, it is believed, in the whole
"kingdom, is doing its best to meet the demand which now
"exists, for scientific and expert advice, and to supply infor-
"mation of practical demonstrations as to the most recent and
"up-to-date methods of husbandry.

"Mr. J. B. Forrester, 38 Prince of Wales Road, Norwich,

"who most kindly acts as honorary secretary, will be pleased to acknowledge subscriptions. The need for these, and especially for annual subscriptions, is still urgent. Thanks are due to this gentleman, to all who have so generously subscribed to the funds raised, and particularly to the Cambridge University Agricultural Department, to whose generous help and assistance the success of the Institute is largely due.

"A MEMBER OF THE EXECUTIVE COMMITTEE"

"The Lady of the Farm World" is, perhaps, as good a way as any of expressing what is conveyed by *La Fermière*, the leading word in the title of a small book in French by Messrs. J. Giele and F. Graftian, of Louvain, published at 15, Rue de la Station, Louvain, by Fernand Giele.

In this publication, while only professing to describe a very fine exhibit at the International Exhibition at Brussels, the authors tell succinctly of the work done by the Belgian Government for the agricultural education of womankind. A thorough inquiry has revealed how very accurate they have been in stating simply what has been done. It is to be hoped that this book may be read by those interesting themselves in administrative agricultural work in the counties of this country. For of necessity the line of work it describes is far more truly that of the "small holder" than of the professional agriculturist or farmer. The course of instruction given is very comprehensive and thorough. The Director General of Agriculture, Mons. Proost, told the writer of this note that in Belgian agricultural education full account was taken of the large part played by woman on the farm, both as a helpmate and a companion to the farmer. Mons. Proost is often described as the originator of the scheme about which Messrs. Giele et Graftian write, but of which a detailed notice is prevented by want of space.

The perusal of the book has left a very blank feeling concerning the education of our own small holder who, when he hears of this education given to the wives and daughters of his nearest rivals, must ask himself how he is to compete with the man who has so many advantages. In this little book we also read of instruction which is given to small holders by several countries larger if not more enthusiastic than Belgium.

THE LATE EARL SPENCER.

Born October 27, 1835.

Died August 13, 1910.

THE House of Spencer has been so prominently associated with the affairs of the Royal Agricultural Society of England since its first inception in 1838, that it is only fitting that a brief notice should appear in these pages of John Poyntz Spencer, the fifth earl, a nephew of the third earl, who was one of the founders of the Society and its first President.

The late Lord Spencer's estates comprised some 26,000 acres, situated in the counties of Northampton, Leicester, Warwick, Buckingham, Hertford, Norfolk, and Flint, some of which were purchased by the celebrated Sarah, Duchess of Marlborough, for her favourite grandson, the Hon. John Spencer, whose son was created Earl Spencer and Viscount Althorp in 1765.

When the bad times and wet cycle of years began in 1879, the late Earl made considerable reductions in his rents, and expended large sums of money in drainage, charging no interest on the outlay to his tenants.

The estates have always been maintained in an efficient state of repair, even in the bad times. An interesting account by his agent, Mr. A. L. Y. Morley, showing how Great Brington and Little Brington—of which villages the late Earl was the principal landowner—were supplied with water raised by wind power, appeared in the Society's Journal for the year 1897.¹

An address, presented to Earl Spencer in 1907, when he had completed fifty years' ownership of the family estates, gave expression to the esteem in which he was held by his tenants. This address—which was accompanied by a handsome silver cup—contained the following paragraph :—

"We consider ourselves fortunate in being your tenants, and are fully conscious of the generous, just, and efficient manner in which you have always carried out the management of your large estates. During your ownership of them, agriculture has experienced very considerable prosperity and the greatest depression of modern times, but whether in prosperity or adversity you have always acted up to the best traditions of your family by showing a strong and generous sympathy with your tenantry, which not even the severe strain of the great agricultural depression of the last twenty-nine years could affect."

¹ "The Use of Wind Power in Village Water Supply," Vol 58, page 288 R.A.S.E. Journal.

Both the late Earl and his grandfather held the estates for upwards of half a century.

His lordship for many years kept a herd of pedigree Shorthorns, and he always possessed sound and good Shire, Hackney, and thoroughbred stallions, which were available for the use of his tenants at nominal fees.

The services rendered by Lord Spencer to his country in many high offices of State need not be here mentioned; but it is said that, apart from work and duty, his ruling passion was for horse and foxhound, and he was on three separate occasions Master of the Pytchley Hunt.

While Lord Lieutenant he inaugurated the Spencer Prize System for the Small Farmers in Ireland with the object of creating a taste for progress among this class and of ameliorating their condition. An account of this, one of his many efforts on behalf of agricultural progress, has been written by Professor Baldwin.¹

His own personal association with the Royal Agricultural Society commenced in the year 1860, when he became a member, joining the Council in 1874 at the end of his first term of office as Lord Lieutenant of Ireland. He was elected a Vice-President in 1883 and a Trustee in 1898. He also filled the Presidential Chair in the later year, when the Annual Country Meeting was held in Four Oaks Park, Sutton Coldfield, Birmingham. In consequence of ill health he had for some time been unable to attend the meetings of the Council, and in 1908 he resigned his position as a Trustee.

¹ "The Prize System as applied to Small Farmers in Ireland," R.A.S.E. Journal, Vol. 38, 1877, page 394.

Royal Agricultural Society of England.

— — —

Patron, and President for 1911 :

HIS MOST GRACIOUS MAJESTY THE KING.

Year when
first elected
on Council

Trustees.

1889	H.R.H. PRINCE CHRISTIAN, K.G., <i>Cumberland Lodge, Windsor.</i>
1895	BEDFORD, Duke of, K.G., <i>Woburn Abbey, Bedfordshire.</i>
1871	BOWEN-JONES, J., <i>St. Mary's Court, Shrewsbury.</i>
1893	CORNWALLIS, F. S. W., <i>Linton Park, Maidstone, Kent.</i>
1885	COVENTRY, Earl of, <i>Croome Court, Severn Sloke, Worcestershire.</i>
1898	DEVONSHIRE, Duke of, <i>Chatsworth, Chesterfield.</i>
1881	GILBEY, Sir WALTER, Bart., <i>Blenheim Hall, Blenheim, Essex.</i>
1883	JERSEY, Earl of, G.C.B., G.C.M.G., <i>Middleton Park, Bicester, Oxon.</i>
1899	MIDDLETON, Lord, <i>Birdsall House, York.</i>
1880	MORETON, Lord, <i>Saraden House, Chipping Norton, Oxon.</i>
1899	NORTHBROOK, Earl of, <i>Stratton, Micheldever, Hampshire.</i>
1881	THOROLD, Sir JOHN H., Bart., <i>Old Hall, Syston, Grantham, Lincs.</i>

Vice-Presidents.

1905	ADEANE, C. R. W., <i>Babraham Hall, Cambridge.</i>
1905	COOPER, Sir RICHARD P., Bart., <i>Shenstone Court, Lichfield.</i>
1887	CRUTCHLEY, PERCY, <i>Sunninghill Lodge, Ascot, Berkshire.</i>
1908	DIBBY, Earl of, G.C.V.O., C.B., <i>Knowsley, Prescot, Lancashire.</i>
1891	DUGDALE, J. MARSHALL, <i>Llwyn, Llanfyllin, S.O., Mont.</i>
1903	FELLOWES, Rt. Hon. ATLWYN E., <i>Honingham, Norwich.</i>
1876	FEVERSHAM, Earl of, <i>Duncombe Park, Helmsley, Yorkshire.</i>
1900	GIRAVES, R. M., <i>Wern, Portmadoc, North Wales.</i>
1904	GREENALL, Sir GILBERT, Bart., <i>Walton Hall, Warrington, Cheshire.</i>
1908	NORTHUMBERLAND, Duke of, K.G., <i>Alnwick Castle, Northumberland.</i>
1881	PARKER, Hon. GEORGE T., <i>Eccleston, Chester.</i>
1907	YARBOROUGH, Earl of, <i>Brocksby Park, Lincolnshire.</i>

Ordinary Members of the Council.

1910	ALEXANDER, J. T., <i>Bryneathin, Dinas Powis (Glamorganshire).</i>
1905	AYLING, THOMAS L., <i>Holey Hill House, Rochester (Kent).</i>
1906	BROCKLEHURST, HENRY DENT, <i>Sudley Castle, Winchcombe (Glos.).</i>
1909	BROCKLEHURST, Maj.-Gen., <i>Ranbrough, Ockham (Huttland).</i>
1910	BROWN, DAVID, <i>Marham Hall, Downham Market (Norfolk).</i>
1906	BUTTAR, THOMAS A., <i>Corston, Coupar Angus (Scotland).</i>
1906	CARDEN, RICHARD G., <i>Montebello, Killiney, Co. Dublin (Ireland).</i>
1905	CARR, RICHARDSON, <i>Stute Office, Tring Park (Hertfordshire).</i>
1910	COOPER, RICHARD A., M.P., <i>Ashlyn Hall, Berkhamsted (Hertfordshire).</i>
1909	CROSS, Hon. JOHN E., <i>High Leigh, Knutsford (Cheshire).</i>
1906	DUDDING, HENRY, <i>Riby Grove, Thallingborough (Lincolnshire).</i>
1905	EADIE, JOHN T. O., <i>The Rock, Newton Maltney (Derbyshire).</i>
1905	FALCONER, JAMES, <i>Northbrook Farm, Micheldever Station (Hampshire).</i>
1907	FRANK, HOWARD, <i>20 Hanover Square, W. (London).</i>
1909	GARNE, W. T., <i>Aldworth, Northleach (Gloucestershire).</i>
1906	GLOVER, JAMES W., <i>Beechwood, Warwick (Warwickshire).</i>
1907	HAMLEN, ERNEST A., <i>Oakdale, Ockley (Surrey).</i>
1910	HARLEIGH, LORD, <i>Brogyntyn, Oswestry (Shropshire).</i>
1905	HARRIS, JOSEPH, <i>Brackenbrough Tower, Carlisle (Cumbria).</i>
1908	HARRISON, WILLIAM, <i>Hall House, Leigh (Lancashire).</i>
1909	HAZLERIGG, Sir ARTHUR G., Bart., <i>Nossley Hall (Leicestershire).</i>
1910	HENDERSON, Major H. G., M.P., <i>Kitemore, Warrington (Cheshire).</i>

Year when
first elected
on Council

Ordinary Members of the Council (*continued*).

1905	HINE, JOHN HENRY, <i>Pomphlett Farm, Plymstock, Plymouth (Devon).</i>
1906	HIPPISLEY, R. J. BAYNTUN, <i>Ston Easton Park, near Bath (Somerset).</i>
1905	HISCOCK, ARTHUR, <i>Manor Farm, Motcombe, Shaftesbury (Dorset).</i>
1903	HOBBS, ROBERT W., <i>Kelmscott, Lechlade (Oxfordshire).</i>
1908	HOSKEN, W. J., <i>Pulsack, Hayle (Cornwall).</i>
1900	HOWARD, JOHN HOWARD, <i>Clapham Park, near Bedford (Bedfordshire).</i>
1905	INGRAM, WALTER F., <i>2 St. Andrew's Place, Lewes (Sussex).</i>
1905	KNIGHTLEY, SIR CHARLES V., <i>Bait., Fawley, Darenty (Northants).</i>
1909	LUDDINGTON, J. L., <i>Littleport (Cambridgeshire).</i>
1909	MANSELL, ALFRED, <i>College Hill, Shrewsbury (Shropshire).</i>
1904	MATHEWS, ERNEST, <i>Little Shardeloes, Amersham (Buckinghamshire).</i>
1905	MAY, WILLIAM A., <i>3 Wellington Street, Strand, W.C. (London).</i>
1904	MIDDLETON, CHRISTOPHER, <i>Vane Terrace, Darlington (Durham).</i>
1910	MIDWOOD, G. NORRIS, <i>The Grange, North Road, Congleton (Cheshire).</i>
1884	MILLER, T. HORROCKS, <i>Singleton Park, Poulton-le-Fylde (Lancashire).</i>
1907	NOCTON, WILLIAM, <i>Langham Hall, Colchester (Essex).</i>
1910	OVERMAN, HENRY, <i>Weasenham, Swaffham (Norfolk).</i>
1909	PATTERSON, R. G., <i>Acton Hill, Stafford (Staffordshire).</i>
1905	PILKINGTON, CLAUDE M. S., <i>Wollaton, Nottingham (Nottinghamshire).</i>
1906	PLUMPTRE, H. FITZWALTER, <i>Goodnestone, Dover (Kent).</i>
1909	PROUT, W. A., <i>Sawbridgeworth, Herts. (London).</i>
1905	REA, GEORGE GREY, <i>Middleton, Wooler (Northumberland).</i>
1897	REYNARD, FREDERICK, <i>Sunderlandviack, Driffield (Yorks., E. Riding).</i>
1905	RICHMOND AND GORDON, Duke of, K.G., <i>Goodwood, Chichester (Sussex).</i>
1908	RIDLEY, Viscount, <i>Blagdon, Bramlington (Northumberland).</i>
1897	ROGERS, C. COLTMAN, <i>Stanage Park, Brampton Bryan (South Wales).</i>
1905	ROWELL, JOHN, <i>Bury, Huntingdon (Huntingdonshire).</i>
1901	SCOBY, WILLIAM, <i>Hobground House, Sunnington (Yorks., N. Riding).</i>
1907	SMITH, FRED, <i>Woodbridge (Suffolk).</i>
1905	SMITH, HENRY HERBERT, <i>Bowood, Calne (Wiltshire).</i>
1891	STANYFORTH, E. WILFRID, <i>Kirk Hammerton Hall, York (Yorks., W. R.).</i>
1905	TAYLOR, GEORGE, <i>Cranford (Middlesex).</i>
1907	TINDALL, C. W., <i>Wainfleet (Lincolnshire).</i>
1904	TURNER, ARTHUR P., <i>The Leen, Pembridge (Herefordshire).</i>
1889	WHEELER, E. VINCENT V., <i>Newnham Court, Tenbury (Worcestershire).</i>
1889	WILSON, C. W., <i>Rigmaden Park, Kirkby Lonsdale (Westmorland).</i>
1908	WRIGLEY, LOUIS C., <i>Trellick Grange, Chepstow (Monmouthshire).</i>

Honorary Director.

SIR GILBERT GREENALL, BART.

Secretary.

THOMAS MCROW, 16 Bedford Square, W.1.

Editor of Journal.—K. J. J. MACKENZIE, 10 Richmond Road, Cambridge.

Consulting Chemist.—DR. J. AUGUSTUS VOELCKER, M.A., F.R.C., 22 Tudor Street, London, E.C.

Consulting Veterinary Surgeon.—PROF. SIR JOHN McFADYEN, Royal Veterinary College, Camden Town, N.W.

Botanist.—PROFESSOR R. H. BIFFEN, M.A., School of Agriculture, Cambridge.

Zoologist.—CECIL WARBURTON, M.A., School of Agriculture, Cambridge.

Consulting Engineer.—F. S. COURTNEY, 25 Victoria Street, Westminster, S.W.

Surveyor.—J. R. NAYLOR, F.R.I.B.A., Smith's Bank Chambers, Derby.

Consulting Surveyor.—GEORGE HUNT, Wreaham, Worcestershire.

Publisher.—JOHN MURRAY, 50A Albemarle Street, W.

Solicitors.—GARRARD, WOLFE, GAZE & CLARKE, 13 Suffolk Street, Pall Mall East, S.W.

Bankers.—THE LONDON COUNTY AND WESTMINSTER BANK, St. James's Square Branch.

**DISTRIBUTION OF GOVERNORS AND MEMBERS OF THE
SOCIETY, AND OF ORDINARY MEMBERS OF THE COUNCIL.**

ELECTORAL DISTRICT	DIVISION	NUMBER OF GOVERNORS AND MEMBERS	NUMBER OF ORDINARY MEMBERS OF COUNCIL	ORDINARY MEMBERS OF COUNCIL
A.	MILFORD-HIRE	92	1	J. H. Howard
	CHILCHESTER	314	2	Hon. J. E. Cross; (1 North Mid- wood)
	CORNWALL	91	1	W. J. Hosken.
	DERBYSHIRE	147	1	J. T. O. Eadie.
	DEVON	80	1	A. Hiscott.
	HAMPSHIRE AND CHANNEL ISLANDS . .	229	1	J. Falconer.
	HEREFORDSHIRE . .	250	1	Richardson Carr.
	LANCASHIRE AND ISLE OF MAN	110	2	W. Harrison; T. H. Miller.
	MIDDLESEX	112	1	G. Taylor
	MONMOUTHSHIRE . .	57	1	L. C. Wmley.
	NORFOLK	162	2	Davis Brown, Henry Overman.
	NORTHAMPTONSHIRE .	186	1	Sir C. V. Knightley.
	NORTHUMBRLAND . .	205	2	C. G. Rea; Viscount Ridley.
	STAFFORDSHIRE . .	201	1	R. A. Cooper, M.P.; R. G. Patterson
	WORCESTERSHIRE . .	193	1	E. V. V. Wheeler.
	YORKSHIRE N.R. . .	106	1	W. Scooby
	SCOTLAND	225	1	T. A. Buttar.
		3,638	22	
B.	BUCKINGHAMSHIRE . .	155	1	R. Mathews.
	DEVON	172	1	J. H. Hine.
	DURHAM	142	1	C. Middleton.
	ESSEX	203	1	W. Nocton.
	HEREFORDSHIRE . .	143	1	A. P. Turner.
	LEICESTERSHIRE . .	213	1	Sir A. G. Hazzlerigg.
	LONDON	500	3	Howard Frank; W. A. May; W. A. Prout.
	NOTTINGHAMSHIRE . .	149	1	C. M. S. Pilkington.
	RUTLAND	27	1	Maj.-Gen. J. F. Brocklehurst.
	SURREY	332	2	Lord Harlech; Alfred Mansell.
	SUSSEX	241	1	Fred Smith.
	SURREY	226	1	R. A. Hamlyn.
	WILTSHIRE	182	1	H. H. Smith.
C.	YORKSHIRE, W.R. . .	250	1	R. W. Stunyforth.
	SOUTH WALES	100	1	C. C. Rogers.
		— 3,051	— 18	
	BERKSHIRE	201	1	Major H. G. Henderson, M.P.
	CAMBRIDGESHIRE . .	170	1	J. L. Luddington.
	CUMBERLAND	128	1	Joseph Harris.
	GLAMORGAN	81	1	D. T. Alexander.
	GLOUCESTERSHIRE . .	870	2	H. D. Brocklehurst; W. T. Garne.
	HUNTINGDONSHIRE . .	42	1	John Rowell.
	KENT	322	2	T. L. Aveling; H. F. Plumtree.
	LINCOLNSHIRE	351	2	Henry Dudding; C. W. Tindall.
	OXFORDSHIRE	180	1	R. W. Hobbs.
	SOMERSET	114	1	R. J. Bayntun Hippiusley.
	SUSSEX	812	2	W. F. Ingram; Duke of Richmond and Gordon.
	WARWICKSHIRE	253	1	J. W. Glover.
	WESTMORLAND	56	1	C. W. Wilton.
	YORKSHIRE, N.R. . .	112	1	F. Reynard.
	IRELAND	126	1	R. G. Carden.
	NORTH WALES	191	1	
		— 3,083	— 20	
FOREIGN COUNTRIES		307		
MEMBERS WITH NO ADDRESSES . .		18		
		—	—	
GRAND TOTALS		10,095	60	

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS
IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total.
		Life	Annual	Life	Annual	Honor- ary	
1839	3rd Earl Spencer	—	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	146	2,434	5	2,800
1841	Mr. Philip Pusey	91	219	231	4,017	7	4,695
1842	Mr. Henry Handley	101	211	328	5,194	15	5,819
1843	4th Earl of Hardwicke	94	200	429	6,155	15	6,002
1844	3rd Earl Spencer	95	211	412	6,161	15	6,927
1845	5th Duke of Richmond	94	198	527	5,899	15	6,733
1846	1st Viscount Portman	93	201	551	6,105	19	6,971
1847	6th Earl of Eglmont	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	93	186	648	5,387	21	6,335
1849	3rd Earl of Chester	89	178	583	4,643	20	5,513
1850	4th Marquis of Downshire	90	180	627	4,350	19	5,261
1851	5th Duke of Richmond	91	183	674	4,173	19	5,121
1852	2nd Earl of Dunc	93	150	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	789	3,028	19	4,923
1854	Mr. Philip Pusey	88	140	771	4,152	20	5,177
1855	Mr. William Miles, M.P.	89	141	705	3,838	19	4,882
1856	1st Viscount Portman	85	130	839	3,896	20	4,879
1857	Viscount Osmington	83	137	866	3,083	19	5,068
1858	6th Lord Berners	81	133	904	4,010	18	5,116
1859	7th Duke of Marlborough	78	130	937	4,008	18	5,161
1860	5th Lord Walsingham	72	119	927	4,047	18	5,183
1861	4th Earl of Powis	84	90	1,113	3,528	18	4,638
1862	{ H.R.H. The Prince Consort 1st Viscount Portman }	83	97	1,151	3,475	17	4,823
1863	Viscount Eversley	80	88	1,263	3,735	17	5,183
1864	2nd Lord Feversham	78	45	1,348	4,013	17	5,496
1865	Sir E. C. Kerrison, Bart., M.P.	79	81	1,366	4,190	18	5,762
1866	1st Lord Tredegar	79	84	1,366	4,049	15	5,023
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,465
1868	6th Duke of Richmond	75	74	1,409	3,888	15	5,461
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,884	17	5,446
1870	7th Duke of Devonshire	74	74	1,511	3,784	15	5,456
1871	6th Lord Vernon	73	74	1,589	3,896	17	5,648
1872	Sir W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	14	5,788
1873	Earl Oathcart	74	82	1,832	3,936	12	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,846
1875	Viscount Bridport	79	79	2,058	3,918	11	6,145
1876	2nd Lord Osham	83	78	2,164	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,230	4,073	17	6,486
1878	Col. Kingscote, O.B., M.P.	81	72	2,328	4,130	20	6,637
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,153	4,700	26	7,332
1880	9th Duke of Bedford	83	70	2,073	5,083	20	7,929
1881	Mr. William Wells	85	69	2,765	5,011	19	7,979
1882	Mr. John Dent Dent	82	71	2,819	5,050	19	8,080
1883	6th Duke of Richmond and Gordon	78	71	2,079	4,052	19	8,089
1884	Sir Brandreth Gibbs	72	72	3,203	5,408	21	8,776
1885	Sir M. Lopes, Bart., M.P.	71	69	3,356	5,019	20	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,509	20	9,131
1887	Lord Egerton of Tatton	71	61	3,410	5,387	20	8,682
1888	Sir M. W. Ridley, Bart., M.P.	68	56	3,521	5,225	16	8,884
1889	HIS MAJESTY QUEEN VICTORIA	73	58	3,567	7,153	15	10,800
1890	Lord Morleton	122	58	3,816	6,041	17	10,884
1891	2nd Earl of Ravensworth	117	60	3,811	6,921	19	10,939
1892	Earl of Feversham	111	69	3,784	7,040	20	11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,138	21	11,126
1894	8th Duke of Devonshire, K.G.	113	73	3,788	7,212	22	11,218
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,176	23	11,116
1896	Sir Walter Gilbey, Bart.	126	83	3,686	7,285	23	11,180
1897	H.R.H. The Duke of York, K.G.	126	83	3,706	7,285	24	11,223
1898	Earl Spencer, K.G.	121	79	3,687	7,182	25	11,064
1899	Earl of Coventry	116	75	3,656	7,009	23	10,879
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,832	24	10,866
1901	Earl Oswald	102	70	3,564	6,338	27	10,083
1902	H.R.H. Prince Christian, K.G.	100	69	3,500	5,955	26	9,660
1903	H.R.H. The Prince of Wales, K.G.	89	62	3,439	5,771	27	9,398
1904	10th Earl of Derby, K.G.	96	68	3,375	5,906	52	9,477
1905	Lord Middleton	95	72	3,270	5,818	31	9,276
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30	9,600
1907	Earl of Yarborough	81	174	3,078	6,299	29	9,669
1908	Duke of Devonshire	89	178	3,019	6,442	30	9,758
1909	Earl of Jersey, G.O.B.	91	177	2,951	6,696	31	9,946
1910	Sir Gilbert Greonall, Bart.	86	186	2,878	6,934	31	10,095

STATEMENT made to the Council by the Chairman of the Finance Committee, on presenting the Accounts for the year 1910.

Mr. ADAMS, on behalf of the Finance Committee, presented the audited accounts for the year 1910. Taking first the statement of ordinary income and expenditure, their total expenditure last year was 8,872*l.*, showing an increase of 51*l.* over the preceding year. That increase was mainly accounted for by the cost of the trials of agricultural motors, which had been somewhat heavy amounting to 508*l.*. The income of 9,335*l.* for last year showed an increase over the previous year of 383*l.*, which was due to a larger receipt from investments and an increased membership. The credit balance for the year had been 102*l.* 13*s.* 5*d.*

If they turned to the balance-sheet, it would be noticed that the capital of the Society on December 31 last stood at 56,375*l.*. In 1909 it was 47,717*l.*. He thought the Council would agree that the most satisfactory part of the balance-sheet was to be found in the figure which represented the Reserve Fund. If they took the figure at which it stood in the balance-sheet (49,600*l.*) and added the sum of 600*l.*, which it was proposed that day to place to reserve, that would give them the total sum of 50,200*l.*, which was the amount they had, or were going to have, invested in Consols to form their Reserve Fund. In addition, the Society had in the last five years paid for the lease of its house and for the building of the Council chamber, which together cost about 3,000*l.*. It might interest them to know how their Reserve Fund had been accumulated. The net profit in the Shows for the last five years was 22,621*l.*. They had accumulated 11,173*l.* from the ordinary account against losses on Shows; from donations, life compositions, and credit balances, 8,233*l.*; and from the surplus which remained from the sale of Harewood House, Park Royal, and from other sources, 11,225*l.*. He thought the Council would agree that that was not a bad accumulation in just over five years, and that it showed that the Society was possessed of a certain amount of recuperative power. But while those accumulations had been going on they had not been in any way niggardly in their expenditure: in fact, he would be able to show that they had increased very largely the expenditure which was greatly reduced five years ago. It would be remembered that at that time the Council not only considerably reduced the Staff of the Society, but reduced the salaries of those who remained. It was a satisfaction to the Council to feel that as soon as they had been able to afford it the Staff had been put back on the footing of their old salaries. In 1909 salaries were increased by 72*l.* a year; they had increased the grant to the Veterinary Committee by 200*l.*, pensions by 100*l.*, and the grant to the Journal Committee by 100*l.*. It would be remembered that the contribution to the Show Fund for prizes was reduced five years ago to 1,000*l.*. When the Society's financial position improved they had increased the grant to 5,000*l.*, and now the contribution was 5,600*l.*. Adding these increases together, their expenditure had increased by the sum of 1,972*l.* a year.

FORECAST OF ORDINARY REVENUE AND EXPENDITURE FOR 1911.

(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the recommendations of September 21, 1906, made by the Special Committee.

Actual Figures for 1910.	Receipts.	£
7,283	From Subscriptions for 1911 of Governors and Members	7,900
105	From Interest on Daily Balances	100
1,118	From Interest on Investments	1,400
229	From Sales of Text Book, Pamphlets, &c. (This does not include the sales of Journals, which are deducted from the cost of production)	250
9,885		9,650

		<i>Expenditure.</i>	
£			£
1,588	Salary of Secretary and Official Staff		1,588
215	Pensions to Officials		140
711	Rent, Lighting, Cleaning, Wages, &c. (44y)		700
421	Printing and Stationery		400
198	Postage and Telegrams		200
473	Miscellaneous		500
700	Journal		730
615	Chemical Department		600
250	Botanical Department		250
200	Zoological Department		200
202	Veterinary Department		400
174	Examinations for National Diplomas (R.A.S.E. Share)		200
5,697			5,908
		<i>Exceptional Expenditure</i>	
£			£
	Calf Experiments		300
	Cost of redecorating Council Chamber		65
	Special Grant to Botanical Committee (Biological Investigations, Woburn)		50
	Expenses of preparing Catalogue for Library and binding Books		50
	Reprint and Reviewing of Text Book		400
2,500	Contribution from Governors' and Members' Subscriptions to the expenses of the Annual Show		2,500
508	<i>Trials of Agricultural Tractors.</i>		
29	<i>Exhibits at Brussels and Buenos Aires Exhibitions.</i>		
21	<i>Donation to Royal Agricultural Benevolent Institution.</i>		
40	<i>Hill's Bequest: Excess Expenditure for 1908.</i>		
77	<i>Apparatus, &c., Botanical and Zoological Departments.</i>		
8,872	Total Estimated Expenditure		9,271
	Estimated Receipts		8,650
	Estimated Expenditure		9,271
468	Estimated Receipts over Expenditure		879

Turning to the estimate of receipts and expenditure for the present year, it was estimated that the receipts from Subscriptions would amount to 7,900*l.*, the Interest on Daily Balances, 100*l.*, the Interest on Investments 1,400*l.*, and from the Sales of Text Book, Pamphlets, &c., 250*l.*, bringing their total estimated income up to 9,650*l.* They estimated the expenditure would be:—For salaries of Secretary and Official Staff, 1,586*l.*; Pensions to Officials, 140*l.*; Rent, Lighting, Cleaning, Wages, &c., 700*l.*; Printing and Stationery, 400*l.*; Postage and Telegrams, 200*l.*; Miscellaneous, 500*l.*; Journal, 730*l.*; Chemical Department, 600*l.*; Botanical Department, 250*l.*; Zoological Department, 200*l.*; Veterinary Department, 400*l.*; National Diploma Examinations, 200*l.*; giving a total estimated ordinary expenditure of 5,906*l.* Under the head of exceptional expenditure they had the Tuberculosis Experiment, which they estimated would cost 300*l.* this year; the cost of redecorating the Council Room, which work had already been done, 65*l.*; Special Grant to Botanical Committee, 50*l.*; expenses of preparing Catalogue for Library and binding books, 50*l.*; reprint of Text Book, 400*l.*; contribution to Show Fund, 2,500*l.*; giving a total ordinary and extraordinary expenditure of 9,271*l.*, showing an estimated balance of receipts over expenditure for the year of 379*l.*

He was sure it would be a satisfaction, not only to the Council, but to the whole Society, to feel that this year, when the Society was so specially honoured by having His Majesty the King as its President, it was in a stable position. He hoped they would not stop there, but regard the Reserve Fund of 50,200*l.* as a half-way house, and would make it their goal to get a Reserve Fund of no less than 100,000*l.* He thought that if they considered the enormous responsibilities of the Society to the agricultural industry of this country, not only in maintaining the high standard of their live stock, but in protecting that stock against disease, in encouraging the application of science to the uses of agriculture, in stimulating as far as they could the invention of time and labour saving machinery, they would realise that, if they were to fulfil those responsibilities and use to the utmost the power they undoubtedly possessed, it would be necessary for them to have a large Reserve Fund, and he did not think the figure he had mentioned would be any too great for that purpose.

Royal Agricultural Society of England.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31. 1910.

	£	s.	d.		£	s.	d.
To Hills' Bequest for Pot-culture Experiments . . .	9,000	0	0	By 8,126l. 8s. 2d. Consols. at cost .	9,000	0	0
To Fund provided by Sir Walter Gilbey for Endowment of Lectureship at Cambridge until July 31, 1917, when any balance on this account will become the property of the Society . . .				By 1,140l Metropolitan Water Board Stock A at cost . . .			998 1 0
				By amount included in the Society's Sundry Creditors' Account : £ s. d.			
				Fund uninvested . . .	1	19	0
				Income over expenditure . . .	24	9	6
					26	8	6
					£10,024	9	6

Examined, audited, and found correct, this 16th day of February, 1911

THOMAS MCROW, *Secretary*
WELTON, JONES & CO., *Accountants*

JONAS M WEBB. } *Auditors on*
HUBERT J GREENWOOD, } *behalf of*
the Society

ROYAL AGRICULTURAL

Dr.

BALANCE-SHEET,

Corresponding figures for 1909

6

1,729

112

109

1,950

To SUNDRY CREDITORS—

Sundry Creditors

1,805 11 10

Subscriptions received in 1910 in advance . .

177 3 0

Show Receipts received in 1910 and belonging to

1911

1,891 8 1

3,876 2 11

To CAPITAL—

As at December 31, 1909

47,716 7 4

BALANCE FROM SHOW FUND—

Profit on Show at Liverpool

5,482 11 11

Contribution from Ordinary Income

2,500 0 0

2,173

730

1,654

590

Life Compositions received in 1910

7,982 11 11

Donations towards the Society's Funds

503 0 0

Credit Balance on Ordinary Income and Expen-

diture Account

53 1 0

462 13 5

48,145

50,717 13 8

DEPRECIATIONS written off, viz.:-

Fixtures

36 2 4

Furniture

158 17 0

Machinery

8 10 9

Show Plant

88 5 4

Buildings at Woburn

50 0 0

428

342 4 5

47,717

56,375 9 2

[Note.—For investments other than those shown in this Balance-sheet see Statement of Funds held in Trust, &c, page vii.]

549,667

560,081 12 2

THOMAS MCROW, *Secretary.*WELTON, JONES & CO., *Accountants.*

SOCIETY OF ENGLAND.

ix

DECEMBER 31, 1910.

(P.

Corresponding figures for 1909

10,100

By Reserve Fund 59,482*l*, 11*s*. 6*d*. Consols. at cost (average cost 8*l*)

£ s. d. £ s. d.
48,800 0 0

2,700

By LEASE OF 16 BEDFORD SQUARE
Less Amount written off

2,700 0 0
100 0 0
2,600 0 0

182

By FIXTURES

Value at December 31, 1909
Less Depreciation at 7½ per cent.

481 11 8
36 2 4
445 9 2

1,588

By FURNITURE

Value at December 31, 1909
Less Depreciation at 10 per cent.

1,588 10 5
158 17 0
1,429 13 5

1,500

By PICTURES (500*l*.) and BOOKS (1,000*l*.)

1,500 0 0

90

By MACHINERY

Value at December 31, 1909
Less Depreciation at 10 per cent.

89 17 7
8 10 9
80 17 10

1,418

By SHOW PLANT

Value at December 31, 1909
Less Destruction of Pavilion by Fire

1,407 13 7
585 0 0

Less Depreciation at 10 per cent.

882 13 7
88 5 4

Added during 1910

794 8 3
70 0 0
864 8 3

500

By BUILDINGS FOR POT EXPERIMENTS AT WOBURN

As per Account at December 31, 1909
Less Depreciation

500 0 0
50 0 0
450 0 0

530

By SUNDRY DEBTORS

678 10 2

404

By CASH AT BANKERS AND IN HAND--

Ordinary Account
Reserve Fund Account
In Hand

2,259 9 4
79 17 11
63 4 1
2,402 13 4

£49,667

£60,051 12 2

Examined, audited, and found correct, this 16th day of February, 1911.

JONAS M. WEBB,

HUBERT J. GREENWOOD

Auditors on behalf of the Society.

STATEMENT OF ORDINARY INCOME

The Expenditure in this account includes not only cash payments,

Corresponding
figures
for 1900

Income.

		£	s	d	£	s	d
	ANNUAL SUBSCRIPTIONS:						
894	Governors: Subscriptions for 1910	885	5	0			
87	Members. Received in 1900, but belonging to 1910	112	7	0			
6,143	Subscriptions for 1910	6,421	3	0			
135	Subscriptions for 1910 (additional)	163	8	0			
82	Subscriptions for previous years	75	0	0			
	LIFE GOVERNORS AND MEMBERS:—						
166	Annual Contributions	162	12	0			
7,707					7,822	15	0
	MISCELLANEOUS:—						
76	Interest on Daily Balances	165	3	0			
939	Income on Investments	1,118	8	9			
59	Sales of Pamphlets, Diagrams, &c	51	10	9			
146	Sales of Text Book	143	17	2			
25	Miscellaneous	33	4	0			
1,245					1,511	13	8
	Rent of 12 Hanover Square	310	15	0			
	Less Rent paid	310	15	0			

£8,952

89,334 13 8

THOMAS MCROW, Secretary.
WELTON, JONES & CO., Accountants.

AND EXPENDITURE FOR THE YEAR 1910.

xi

but all liabilities in connection with the year's transactions

Con-
tributing
Members
for 1910

Expenditure.

	£	s.	d.	£	s.	d.
GENERAL ADMINISTRATION:—						
Salaries of Official Staff	1,537	11	5			
Pensions to Officials			215	0	0	
Professional Charges: Auditors' Fees, &c.			105	18	7	
Rent, Rates, Taxes, Insurance, and House Expenses			711	5	5	
Binding and Purchase of Books			28	13	9	
Printing and Stationery			421	8	1	
Postage and Telegrams			197	13	0	
Carriage of Parcels and Travelling Expenses (including annual visit to Woburn)			83	3	10	
Advertising and Miscellaneous Office Expenses			77	14	9	
						3,377 10 10
JOURNAL OF THE SOCIETY, VOL. 71:—						
Printing, Binding, &c.			559	19	0	
Postage, Packing, and Delivery			200	0	0	
Editing and Literary Contributions			238	0	0	
Illustrations			57	1	7	
						1,053 0 7
<i>Less Sales (Vol. 70 and earlier)</i>			70	0	0	
<i>Credit Balance from Vol. 70</i>			19	10	7	
<i>Advertisements (Vol. 71)</i>			265	0	0	
						700 10 0
<i>Extra Cost of Printing Vol. 69 of Journal.</i>						
ELEMENTS OF AGRICULTURE:						
Printing and Binding Text Book			81	18	0	
Editing new Edition (Hall expense)			50	0	0	
						131 18 0
PAMPHLETS:						
Printing various pamphlets, &c.			24	15	0	
Printing Diagrams			21	15	0	
						46 10 0
LABORATORY:—						
Salaries, Wages, &c.						614 15 6
OTHER SCIENTIFIC DEPARTMENTS:—						
Botanist's Salary and Expenses			250	0	0	
Zoologist's Salary			200	0	0	
Grant to Royal Veterinary College			200	0	0	
Medals for Proficiency in Cattle Pathology			2	5	0	
						652 5 0
NATIONAL DIPLOMA IN AGRICULTURE:						
Honoraria and Expenses of Examiners			181	3	5	
Travelling Expenses of Officials			22	1	2	
Hotel Expenses of Examiners and Officials			34	2	0	
Printing, Stationery, and Postage			26	11	6	
Writing Diplomas			12	15	0	
Salaries for Assistants			49	10	0	
						328 3 1
<i>Less Entry Fees and Sales of Examination Papers</i>			89	11	11	
						238 11 2
<i>Less Highland and Agricultural Society's Motely</i>			118	5	7	
						118 5 7
NATIONAL DIPLOMA IN DAIRYING:—						
Hire of Premises, &c.			20	4	9	
Fees to Examiners			41	2	8	
Hotel and Travelling Expenses			22	17	8	
Printing and Postage			3	5	6	
						87 8 2
<i>Less Entry Fees and Sales of Examination Papers</i>			31	10	4	
						55 11 10
EXTRA EXPENDITURE:						
Trials of Agricultural Tractors			508	4	6	
Brussels and London Area Exhibitions			28	14	8	
Donation to Royal Agricultural Benevolent Institution			21	0	0	
<i>Trials of Hay Bams.</i>						
Hill's Bequest—Excess expenditure for 1909.			40	2	7	
School of Agriculture, Cambridge:—Apparatus, &c.			78	12	9	
						874 14 6
CONTRIBUTION TO SHOW FUND						2,500 0 0
CREDIT BALANCE CARRIED TO BALANCE-SHEET						462 13 3
						88,334 13 3

Examined, audited, and found correct, this 16th day of February, 1911.

JONAS M. WEBB,
HUBERT J. GREENWOOD, } Auditors on behalf of the Society.

STATEMENT OF RECEIPTS AND EXPEN-

JUNE 21 TO

Corresponding figures for 1909		Receipts.	£ s. d.	£ s. d.
2,000		Subscription from Liverpool Local Committee .		3,235 5 7
		Prizes given by Agricultural and Breed Societies .	2,116 8 0	
3,855		Do. do. Liverpool Local Committee .	1,922 0 0	4,108 8 0
		FEES FOR ENTRY OF IMPLEMENTS:—		
		Implement Exhibitors' Payments for Shedding . . .	6,218 8 0	
		Non-Members' Fees for Entry of Implements . . .	189 0 0	
6,076		Fees for Entry of "New Implements" . . .	62 0 0	6,499 8 0
		FEES FOR ENTRY OF LIVE STOCK:—		
		By 2,508 Members Entries @ 1/ . . .	2,508 0 0	
3,080		16 Substituted Entries @ 5s . . .	4 0 0	2,512 0 0
626		By 178 Non-Members Entries @ 2/ . . .	356 0 0	
—		By Horse Boxes (483 @ 1/ ; 49 @ 2/ . . .	581 0 0	
25		By 48 Entries @ 10s . . .	24 0 0	
72		278 Entries @ 5s . . .	89 10 0	
3,803				3,542 10 0
		FEES FOR ENTRY OF POULTRY:—		
		By Members:—253 Entries @ 2s. 6d.	31 12 6	
125		By Non-Members:—886 Entries @ 3s. 6d.	168 18 0	195 8 6
		OTHER ENTRY FEES:—		
95		Produce	87 14 0	
40		Horse-shoeing Competitions	58 0 0	
13		Butter-making Competitions	5 12 0	
82		Horse-jumping Competitions	71 0 0	
93		Farm Prize Competitions	47 0 0	
323				270 6 6
		CATALOGUE:—		
		Extra Lines for Particulars of Implement Exhibits	19 14 0	
6		Woodcuts of "New Implements"	4 13 0	
355		Advertising in Catalogue	333 7 6	
21		Sales of Implement Section of Catalogue (including bound copies)	19 4 3	
533		Sales of Combined Catalogue	818 3 5	
26		Sales of Jumping Programme	31 10 3	
961			1,266 19 2	
32		Less Commission on Sales	38 18 6	
929				1,222 19 8
		MISCELLANEOUS RECEIPTS:—		
—		Admission to Horticultural Exhibition	198 16 6	
515		Amount received from Refreshment Contractors	525 0 0	
91		Rent for Railway Offices	113 10 0	
60		Premium for Cloak Room	60 0 0	
30		Rent for Board of Agriculture Pavilion	30 0 0	
16		Admission to Royal Pavilion	12 10 0	
—		Nurse Cows	18 0 0	
0		Miscellaneous	10 2 0	
722				1,285 18 6
£17,825		Carried forward		£20,330 2 9

DITURE OF THE SHOW AT LIVERPOOL,

xiii

25, 1910.

Corresponding figures for 1909

Expenditure.

	£	s.	d.	£	s.	d.
1 401 {	Transferring Society's Permanent Buildings from (Hou- seholder to Liverpool (including taking down and re- erecting)			1,102	10	0
	Hire of Buildings for second Entrances			200	0	0
	Stewards' Pavilion			212	12	2
7 12	Fencing round Showyard			330	10	1
1 131	Implement Shedding			1,266	8	9
3 402	Stock Shedding			2,068	18	3
201	Poultry and Produce Sheds			247	18	8
202	Dairy			291	17	0
61	Fodder Shed and Office			51	0	0
300	Grand Stand and Large Ring			604	17	5
121	Horse shoeing Shed and Stabling			121	0	0
1 4 57	Various Offices and Stands			772	1	0
218	Printing Signs and Fixings do, Fencing and Judging Rings			337	12	10
171	Education and Forestry Exhibition			199	6	8
7	Insurance			6	12	2
20	Ironmongery			18	18	0
1 104	Hire of Canvas and Felt			1,153	16	4
0 5	General Labour and Horse Hire (including Society's)			573	12	2
28	Clerk of Works)					
				10,882	11	9
11,296	Less 80 Flag Poles at 10s.			10	0	0
1 403						10,842 11 9
9,833						
359	SURVEYOR:					
	Salary, 300l.; Travelling Expenses to London, 31l. 10s.;					335 8 11
	Petty Cash, 3l. 18s. 11d.					
	PRINTING:-					
518 {	Printing of Prize Sheets, Entry Forms, Admission			681	9	1
	Orders, Circulars to Exhibitors, Prize Cards, &c., Tickets,					
	and Miscellaneous					
91	Programmes for Members			183	16	1
30	Plans of Showyard			24	13	0
612	Printing of Catalogues			894	7	4
66	Binding of Catalogues			60	3	3
15	Carriage of Catalogues to Showyard			19	17	6
13	Printing Awards			118	1	0
12	Programmes of Jumping Competitions			18	17	0
1,499						1,987 4 2
115	ADVERTISING:					
180	Advertising Closing of Entries in Newspapers			165	15	0
570	Advertising Show in Newspapers			318	16	0
180	Bill Posting			501	16	8
40	Printing of Posters and Postcards			334	16	2
	Press Visit before Show			65	3	0
1,336						1,436 8 10
87	POSTAGE, CARRIAGE, &c.:					
70	General Postage			100	8	1
6	Postage of Badges to Members			34	14	8
	Carriage of Luggage			6	12	9
123						141 15 6
9,068 {	AMOUNT OF MONEY PRIZES AWARDED, including 4,108l. 6s.					
	given by various Societies and Liverpool Local Committee					
	(see receipt <i>per contra</i>)					9,348 16 0
861 {	COST OF FORAGE FOR LIVE STOCK:					
	Hay, 317l. 7s. 3d.; Straw, 433l. 6s. 8d.; Green Food,					
	201l. 0s. 7d.; Insurance, 8l. 6s.; Wages, 25l. 12s. 2d.;					
	Stewards Expenses, 8l. 13s. 7d.; Kick Covers, 4l. 8s.					1,088 12 8
	JUDGES' FEES AND EXPENSES:-					
506 {	Judges of Miscellaneous Implements, 30l. 12s.; Horses,					
	80l. 13s. 8d.; Cattle, 122l. 1s. 2d.; Sheep, 147l. 14s. 10d.; Pigs,					
	31l. 11s. 8d.; Poultry, 214l. 1s. 2d.; Butter, 5l. 13s. 3d.; Butter-					
	making, 10l. 4s. 4d.; Cheese, 12l. 13s. 2d.; Older and Perry,					653 4 0
	16l. 17s. 8d.; Wool, 7l. 16s. 6d.; Horse-shoeing, 30l. 11s. 6d.;					
	Luncheons, 36l. 14s. 3d.					
37	Badges for Judges and other Officials					52 7 9
39	Rosettes					53 2 0
543,609						
	Carried forward					225,777 9 9

STATEMENT OF RECEIPTS AND EXPENDITURE

Corresponding
figures
for 1909.6
17,838

Receipts (contd.).

Brought forward

£ s. d.
20,330 2 9

ADMISSIONS TO SHOWYARD:—

336	Tue-day, June 21, @ 5s	621 18 6
2,347	Wedne-day, June 22, @ 2s. 6d.	2,397 8 2
1,612	Thur-day, June 23, @ 2s. 6d.	3,583 18 6
1,379	Friday, June 24, @ 1s.	2,103 19 4
983	Saturday, June 25, @ 1s.	1,881 9 1
151	Season Tickets	734 18 6
313	Day Tickets	421 17 7
7,321		11,782 9 10

ENTRANCES TO HORSE RING:—

150	Wednesday, June 22	450 1 0
121	Thursday, June 23	441 4 0
118	Friday, June 24	273 2 6
66	Saturday, June 25	231 9 0
448	Tickets sold for Reserved Enclosure	781 2 4
903		2,179 19 4

SALES:—

122	Sales of Produce at Dairy	127 7 9
339	Auction Sales in Showyard and Share of Commission	340 16 8
461		477 4 0

327

Debit balance

£26,844£24,739 18 11

Examined, audited, and found correct, this 21th day of November, 1910.

THOMAS MOROW, Secretary.
WELTON, JONES & Co, Accountants.JONAS M. WEBB,
HUBERT J. GREENWOOD,
NEWELL P. SQUAREY, } Auditors on
behalf of
the Society.

Corresponding figures for 1900.

23,609

Expenditure (contd.).

	£	s.	d.	£	s.	d.
Brought forward				28,777	9	9
GENERAL ADMINISTRATION:—						
Stewards: Personal and Railway Expenses	140	6	7			
Assistant Stewards: Personal and Railway Expenses	127	12	6			
Official Staff: Extra Clerks, 97l. 10s. 2d.; Lodgings, 11l. 10s.; Maintenance of Clerks, 37l. 8s. 2d.; Travelling Expenses, 16l. 18s.; Secretary's Hotel and Travelling Expenses, 51l. 9s. 6d.	221	1	9			
Finance Office: Superintendent of Turnstiles, 17l. 7s.; Grand Stand Men, 30l. 9s.; Turnstile Men, 62l. 10s.; Bank Clerks, 30l. 18s. 2d.	150	5	2			
Awards Office: Clerks, 25l. 10s. 6d.; Award Boys, 12l. 16s. 4d.	38	6	10			
				677	12	10
General Management:—						
Foreman and Assistant Foremen	70	15	0			
Yardmen and Foddermen	58	13	9			
Door and Gate Keepers	46	1	0			
Veterinary Department: Veterinary Inspectors	86	12	10			
Engineering Department: Consulting Engineer and Assistants, 102l. 9s. 6d.; Wages to Workmen, 10l. 10s. 8d.; House and Maintenance, 7l. 6s.	120	5	5			
Police, &c.: Metropolitan and Local Police, 742l. 6s. 6d.; Commissioners, 21l. 1s. 2d.	706	7	11			
				1,438	15	11
Dairy:— Staff, 118l. 12s. 11d.; Milk, 62l. 0s.; Cream, 20l. 10s. 0d.; Ice, 10l. 12s. 8d.; Utensils, 11l. 17s. 3d.; Salt, 2l. 14s.; Butter Tests, 23l. 5s. 4d.; Milk Analyses, 10l. 18s. 7d.; Carriage, 6l. 9s. 8d.; Engine, 6l. 0s.; Fuel, 2l. 7s. 3d.; Cheese and Butter Boxes, 3l. 4s. 0d.; Lodgings, 6l. 0s. 10d.; Refreshments, 6l. 10s. 0d.; Miscellaneous Payments, 4l. 11s. 2d.	326	18	0			
Poultry:— Superintendent, 10l. 8s. 6d.; Carriage, 12l. 9s.	22	15	6			
Horse-shoeing:— Hire of Forges, 26l. 12s.; Gratuities, 7l. 17s. 0d.; Wages, 7l. 7s.; Fuel, 1l. 8s. 0d.	43	5	3			
Produce:— Analyses of Cider	23	17	0			
				416	15	9
Farm Prize Competition:— Expenses of Judging Farms, &c.				236	14	5
Fruit Tree Spraying Machine Trials						
Prize for Hop Drying Plant						
Horticulture:— Hire of Tents, 178l. 8s. 7d.; Judges, 13l. 15s. 3d.; Wages, 48l. 12s.; Printing, 6l. 4s.; Carriage, 16l. 5s. 3d.; Medals, 46l. 0s. 0d. (For admissions see Miscellaneous Receipts)				310	14	10
GENERAL SHOWYARD EXPENSES:—						
Hire of Land for Storage of Plant	50	0	0			
Band	102	10	0			
Official Luncheon	88	18	6			
Floral Decorations						
St. John Ambulance	30	11	6			
Telephone Extension	44	12	10			
Ashe						
Hire of Chairs	51	17	7			
Telegraph Extension	19	0	0			
Education and Forestry Exhibition	69	13	2			
Plans of Showyard, &c.	18	4	7			
Hire of Furniture	70	12	0			
Fencing in Implement Yard	20	0	0			
Hire of Weighbridge	1	13	5			
Wire Station	10	0	0			
Forge for Stewards' Ponies	1	14	4			
Gratuities to Park Keepers	6	0	0			
Roset to Backs	5	4	0			
Refreshment	2	12	0			
Medals and Engraving	22	18	0			
Gas, &c.	10	10	6			
Carriage	9	0	11			
Billposting in Showyard	8	18	8			
Miscellaneous	15	19	11			
				689	0	6
Credit Balance				4,432	11	11
				23,739	15	11

23,644

Actual profit to the Society on the Liverpool Show
 Contribution from ordinary funds of the Society to the Show
 Fund

25,482 11 11

2,500 0 0

27,982 11 11

cc 3

LIVERPOOL SHOW, 1910.

Statement showing the distribution of the Prizes awarded in the several sections of the Liverpool Show, with comparative figures of the Gloucester Show, 1909.

Corresponding figures for 1909.	STATEMENT OF PRIZES AWARDED.		
	£	£	s. d.
2,658	Horses	2,861	0 0
2,492	Cattle	2,461	0 0
1,980	Sheep	1,886	10 0
708	Pigs	676	15 0
177	Poultry	352	1 0
130	Cheese and Butter	207	0 0
72	Cider and Perry	52	0 0
83	Wool	66	0 0
31	Horse-shoeing	10	10 0
72	Butter-making	16	0 0
625	Farms	150	0 0
—	Horticulture	202	0 0
40	Contribution to Bee Department	10	0 0
9,068		9,316	16 0
2,275	Less:—Prizes given by various Societies, &c.	2,116	6 0
1,580	Prizes given by Liverpool Local Committee	1,992	0 0
3,855		1,108	6 0
5,213		25,238	10 0

[Copies of the full Report of any of the Council Meetings held during the year 1910 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.



Minutes of the Council.

WEDNESDAY, FEBRUARY 2, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:

Present: Trustees. Mr. J. Bowen-Jones, the Earl of Coventry, the Duke of Devonshire, Lord Middleton, Lord Moreton.

Vice Presidents. H.R.H. Prince Christian, K.G., Mr. C. R. W. Adeane, Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. A. R. Fellowes, the Earl of Northbrook, the Hon. C. T. Parker.

Other Members of the Council. Mr. T. L. Aveling, Mr. H. Dent Brooklehurst, Mr. Richardson Carr, Sir Richard P. Cooper, Bart., the Hon. John E. Cross, Mr. Henry Dudding, Mr. J. T. C. Eadie, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. James W. Glover, Mr. R. M. Greaves, Mr. E. A. Hamlyn, Mr. Joseph Harris, Sir Arthur G. Hazlerigg, Bart., Mr. R. W. Hobbs, Mr. John Howard Howard, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. C. Middleton, Mr. T. H. Miller, Mr. T. S. Minton, Mr. W. Nocton, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. F. Reynard, Mr. C. C. Rogers, Mr. Fred Smith, Mr. E. W. Stanyforth, Mr. George Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, and Mr. E. V. V. Wheeler. Mr. Percy Corkhill was also present representing the Liverpool Local Committee.

The minutes of the last meeting of the Council, held on December 8, 1909, were taken as read and approved.

Sir Richard Marcus Brooke, Bart., of Norton Priory, Runcorn, was elected a Governor; 53 duly nominated candidates were admitted into the Society as Members under By-law 2, and one Member was re-elected under By-law 11.

Sir GILBERT GREENALL, in occupying the Presidential Chair for the first time, said he was deeply sensible of the honour which had been conferred upon him by the Members of the Society, to whom he desired to express his gratitude. He was fully cognisant that he was following a long list of illustrious Presidents, and he asked for the kind consideration of the Council in his efforts to conduct the business of the Society in the manner they would expect from the occupant of that Chair. They had been so kind as to allow him to carry on his duties as Honorary Director in addition to the Presidency, and he felt sure he could rely upon the continuance of their support and indulgence in carrying out the duties of his office during the present year.

The PRESIDENT was sure they would have all heard, with the greatest regret, of the death, since the last meeting, of their old friend Mr Garrett Taylor, who had for many years been connected with the Society, having served on the Council from 1889 to 1905. Although he had not been on the governing body for the last few years, his interest in the Society was maintained to the end. He (the President) believed Mr. Taylor's last public appearance was at a meeting held in October to consider the question of inviting the Society to hold their Show in Norwich in 1911. At that meeting Mr Taylor was appointed one of the local Hon. Secretaries, a position he also held in connection with the Show held at Norwich in 1886.

The Report of the Committee of Selection having been received and adopted, the Duke of DEVONSHIRE read a letter from Sir Dighton Probyn to Mr. Fellows, informing the Council that HIS MAJESTY THE KING¹ had been graciously pleased to accept the Presidency of the Society for the year 1911, when the Show would be held at Norwich. It afforded His Grace the utmost gratification to announce that His Majesty the King had been graciously pleased to signify his acceptance of the office of President of the Society during the year 1911, when the Show would be held in the county in which His Majesty's home had been for so many years. As Members of Council would be aware, the Society owed a deep debt of gratitude to the King for the very great interest His Majesty had always shown in the welfare of the Society and the important industry which it represented. He, therefore, begged to move that the following resolution be entered upon the minutes, and that the President be requested, on behalf of the Council, to convey to His Majesty the expression of their grateful appreciation of the honour thus conferred by His Majesty upon the Society :--

"His Majesty the King having been graciously pleased to signify His Majesty's acceptance of the office of President of the Royal Agricultural Society of England for the year 1911, when the Society's Show will be held at Norwich,

Resolved: That His Majesty's gracious intention be reported to the next Annual General Meeting of the Members of the Society, and that the Right Hon. Ailwyn F. Fellowes, of Hovingham Hall, Norwich, be appointed Acting-President during the year of His Majesty's presidency."

Mr. BOWEN-JONES, as the oldest Member of the Council, desired to express his deep sense of the honour which had been afforded him in being allowed to second the motion moved by the Duke of Devonshire. The signal honour which His Majesty the King had conferred upon the Society was a further proof of the interest His Majesty had always shown in the welfare of the Society, and would be received by Members, and all others connected with the agriculture of this country, with feelings of the deepest gratitude. He was sure the Council would approve the suggestion of the Duke of Devonshire that the President should convey to His Majesty, on behalf of the Council, their sense of the great honour conferred upon the Society, which, he ventured to say, would be universally recognised.

The PRESIDENT, in submitting the resolution, said he desired to express the gratification it would afford him to carry out the wish of the Council that he should convey to His Majesty their grateful thanks for the honour His Majesty had conferred upon the Society.

The Right Hon. AILWYN F. FELLOWES said he was very sensible of the honour His Majesty the King had done him in naming him as His Majesty's Deputy, and he could assure the Council that he would do everything that was required of him to the best of his ability.

Deputations from the authorities of York and Doncaster, in support of invitations extended to the Society for the holding of the Show of 1912, were received by the Council. The President, in thanking the deputations for the invitations extended to the Society by the Corporations of York and

¹ The above reference is to His late Majesty King Edward VII. His Majesty King George V. subsequently honoured the Society by accepting the Presidency for 1911 (see page xxv).

Doncaster said that a Sites Committee had been appointed to visit both localities, and he could assure the deputations that their respective claims would receive the most careful consideration of the Council at their meeting to be held on March 2, when they would have before them the report of the Sites Committee.

On the motion of the Duke of DEVONSHIRE, seconded by Mr. ADEANE, it was resolved "That a sum of 20 Guineas be voted as a donation from the Society to the funds of the Royal Agricultural Benevolent Institution."

The Duke of DEVONSHIRE reported that, in accordance with a resolution passed by the Council in November last, the Special Committee had met on the previous day to consider the provisions of the Development and Road Improvement Funds Act, in so far as they related to agriculture. Sir Thomas Elliott, Secretary to the Board of Agriculture, and Mr. A. W. Anstruther, Assistant Secretary, had kindly attended the meeting and had explained to the Committee the points upon which the Board were desirous of having the views of the Society. After considerable discussion, the following resolution had been moved by Mr. BOWEN-JONES seconded by Sir RICHARD COOPER, and carried unanimously:—"That this Committee is of opinion that assistance should be given from the Development Fund to scientific agricultural research, and to the improvement of live stock." The Committee would give detailed consideration to this matter, and had decided to meet again on the afternoon of Monday, February 21, the day preceding the opening of the Shire Horse Show.

The Duke of DEVONSHIRE, in moving the adoption of the report of the Special Committee, said that the occasion was a novel one. They had naturally been unable to arrive at any definite or precise conclusions but the Committee would meet again on the 21st instant. He felt sure he was expressing the wishes of the Committee in saying that any suggestions from Members would be welcomed and would receive the most respectful attention. They were anxious to be in a position to submit to the Board of Agriculture proposals or suggestions which would be useful in effect. It was a large subject and one that was far reaching, and any help they could get in the matter they would be glad to receive.

On the motion of the PRESIDENT, seconded by the Duke of DEVONSHIRE, it was resolved that the Seal of the Society be affixed (1) to the agreement with the Liverpool Corporation with regard to the Show of this year, and (2) to the contract with Messrs. Edward Wood and Sons for the erection of the Showyard.

Other business having been transacted, the Council adjourned until Wednesday, March 2, 1910, at 11 a.m.

WEDNESDAY, MARCH 2, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present:—Trustees.—Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, Lord Moreton, Sir John Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, the Rt. Hon. A. E. Fellowes, the Earl of Northbrook, the Hon. C. T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Bruckleshurst, Mr. Richardson Carr, Sir Richard P. Cooper, Bart., the Hon. John E. Cross, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. James W. Glover, Mr. R. M. Greaves, Mr. E. A. Hanlyn, Mr. J. H. Hine, Mr. A. Hiscock, Mr. John Howard Howard, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. T. H. Miller, Mr. W. Nocton, Mr. R. G. Patterson, Mr. F. Reynard, Viscount Killey, Mr. O. C. Rogers,

Mr. John Rowell, Mr. W. Scooby, Mr. Fred Smith, Mr. E. W. Stanyforth, Mr. A. P. Turner, Mr. C. W. Wilson, and Mr. L. C. Wrigley.

The following members of the Liverpool Local Committee were also present:—Lord Shuttleworth, Mr. R. B. Nelson, and Mr. Percy Corkhill.

The PRESIDENT, in opening the proceedings, said it was his melancholy duty to announce that since the Council last met in that room, they had lost by death two of their number. Mr. Robert Forrest, who joined the Council in 1905, had been a member of the Special Committee appointed in that year, and had also served on the Showyard Works Committee. Mr. Forrest, owing to his local engagements, had not been a very regular attendant at meetings, and it was only at the pressing request of the members of the Society in his Division that he retained his seat on the Council. Mr. Forrest had been elected a Life Governor of the Society so recently as May, 1906. Mr. George Adams, who also joined the Council in 1905, would be remembered as a very successful farmer and breeder of stock, having obtained the second prize of 50% in the Farm Competition held under the auspices of the Society in the year 1882, when the Show was at Reading. Mr. Adams had served on the Stock Prizes and Judges' Selection Committees.

The minutes of the last meeting of the Council, held on February 2, 1910, were taken as read and approved.

The Earl of Macclesfield and Mr. Robert Moud, of Combe Bank, Sevenoaks, were elected Governors, and 48 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted, together with the Accounts and Balance Sheet for the year ended December 31, 1909, and the Estimates of Receipts and Expenditure for the year 1910, as to which documents an explanatory statement was made by Mr. ADEANE (Chairman of the Finance Committee).

The PRESIDENT stated that the Sites Committee had not been able to complete their reports on the sites they had visited at Doncaster and York, and they asked for the permission of the Council to postpone these reports until the April meeting.

The Report of the Chemical and Woburn Committee was received and adopted, including a recommendation that the following Resolution, which had been unanimously passed by the Committee, should be forwarded to the Board of Agriculture:—"That in the opinion of this Committee the Fertilisers and Feeding Stuffs Act in its present form is inoperative and requires amendment."

Sir GILBERT GREENALL reported that it had been decided that the Horticultural Exhibition should be open from Wednesday, June 22, to Saturday, June 25. The classification would be similar to that provided at Gloucester last year, with the addition of classes for the best collection of eight kinds of vegetables, and for the best collection of eight kinds of fruit.

It was reported that the first inspection by the Judges of the Farms entered for competition had been completed. Several questions raised by the Judges with regard to various farms had been considered, and instructions given thereon. The Committee recommended that the second inspection of the farms should take place at the end of May.

The Duke of DEVONSHIRE reported that the Special Committee had met on February 21, when they had again had the advantage of meeting Sir Thomas Elliott and Mr. Anstruther, of the Board of Agriculture, but His Grace regretted that the Committee were not in a position that day to present a definite report. They proposed to have another meeting after the Council, and he hoped they would have something definite to lay before the Council at an early date.

Mr. ROGERS reported that the Forestry Committee had prepared a schedule for the Forestry Exhibition to be held in the Liverpool Showyard, very much on the same lines as last year. The alterations which had been made had

been at the suggestion of the local members of the Royal English Arboricultural Society. They had also prepared a schedule for a Plantations Competition in the district of Lancashire, Cheshire and North Wales.

Other business having been transacted, the Council adjourned until Wednesday, April 6, 1910, at 11 a.m.

WEDNESDAY, APRIL 6, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present: *Trustees.* Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, Lord Middleton, Sir John H. Thorold, Bart.

Vice-Presidents. Mr. C. R. W. Adeane, Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. A. E. Fellowes, the Earl of Northbrook, the Hon. C. T. Parker.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Sir Richard P. Cooper, Bart., the Hon. John E. Cross, Mr. J. T. C. Eadie, Mr. James Falconer, Mr. Howard Frank, Mr. James W. Glover, Mr. R. M. Greaves, Mr. Joseph Harris, Sir A. G. Hazlerigg, Bart., Major H. G. Henderson, M.P., Mr. Baynton Hippisley, Mr. John Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. C. Middleton, Mr. W. Norton, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. P. Plumptre, Mr. W. A. Prout, Mr. G. G. Rea, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. C. C. Rogers, Mr. Fred Smith, Mr. E. W. Stansforth, Mr. George Taylor, and E. V. V. Wheeler.

The following members of the Liverpool Local Committee were also present: Lord Shuttleworth, Mr. R. B. Neilson, Mr. Edward Bohane, and Mr. Percy Corkhill.

The Minutes of the last Meeting of the Council held on March 2, 1910, were taken as read and approved.

One hundred and fourteen duly nominated candidates were admitted into the Society as members under By-Law 2; and one member was re-elected under By-Law 14.

A Report from the Sites' Committee, the members of which had visited the Sites offered at York and Doncaster for the Show of 1912 was received and adopted, including the following recommendation unanimously agreed to by the Committee:—"That having considered the questions arising out of the invitations received by the Council from the City of York and Town of Doncaster for the holding of the Show in 1912, the Committee recommend that the invitation from the Corporation of Doncaster be accepted."

The Report of the General Liverpool Committee was received and adopted. In this report it was stated that Their Royal Highnesses the Prince and Princess of Wales had graciously accepted the invitation of the Lord Mayor and Corporation of Liverpool to be the guests of the City on the evening of June 21. The Prince and Princess will arrive in Liverpool on June 21, and will visit the Show on Wednesday, June 22. Their Royal Highnesses during their stay in Liverpool will occupy Newsham House, which has been placed at their disposal by the Lord Mayor and Corporation.¹

Sir RICHARD COOPER, in presenting this Report, said that the members of the Council were very much indebted to the Lord Mayor and Corporation of Liverpool for the excellent arrangements they had made in connection with the visit of Their Royal Highnesses the Prince and Princess of Wales to Liverpool to attend the Show next June.

Other business having been transacted the Council adjourned until Wednesday, May 4, 1910.

¹ Owing to the lamented death of His Majesty King Edward VII. this visit did not take place. His Majesty King George V. was, however, represented at the Liverpool Show by H.R.H. Prince Arthur of Connaught.

WEDNESDAY, MAY 4, 1910.

At a Monthly Council held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart., (President), in the Chair: -

Present:—*Trustees.*—Mr J. Bowen-Jones, Lord Middleton, Lord Moreton.

Vice-Presidents.—H.R.H. Prince Christian, K.G., Mr. C. R. W. Adeane, Mr Percy Crutchley, the Right Hon. A. E. Fellowes, the Earl of Northbrook.

Other Members of the Council.—Mr D. T. Alexander, Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, Mr. Richardson Carr, Sir Richard P. Cooper, Bart., the Hon John E. Cross, Mr J. T. C. Eadie, Mr. Howard Frank, Mr W. T. Garne, Mr. R. M. Gieves, Mr Joseph Harris, Sir A. G. Hazlerigg, Bart., Mr Layntun Hippisley, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. Alfred Mansell, Mr Ernest Mathews, Mr W. A. May, Mr. C. Middleton, Mr. T. S. Minton, Mr. W. Nocton, Mr. C. M. S. Pilkington, Mr. W. A. Prout, Mr. F. Reynard, Viscount Ridley, Mr. O. C. Rogers, Mr W. Scooby, Mr Fred Smith, Mr. E. W. Stanyforth, Mr. George Taylor, Mr. C. W. Tindall, and Mr. L. C. Wigley.

The following Members of the Liverpool Local Committee were also present:—Mr. R. B. Neilson and Mr. Perry Corkhill.

The Minutes of the last Meeting of the Council, held on April 6, 1910, were taken as read and approved.

Seventy-eight duly nominated candidates were admitted into the Society as Members.

A Report was presented from the Veterinary Committee, stating—amongst other things—that further consideration had been given to the suggestion made by Mr. Adeane at the last meeting of the Committee, that experiments should be carried out at the Woburn Farm with calves from tuberculous cows. After a prolonged discussion, it had been moved by Mr. MANSELL, and seconded by Mr. EADIE, that the proposed experiments with calves be carried out at an expenditure not exceeding 500*l.* On a show of hands, however, the motion had been lost by six votes to two.

Mr. ADEANE asked leave to move an amendment in the following terms, to the Report of the Veterinary Committee, giving at length the reason for his action:

“That the experiments suggested to the Veterinary Committee for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents, be referred back to the Veterinary Committee for reconsideration, and that they have power, in conjunction with the Finance Committee, to act.”

Speeches were also made by Mr. BOWEN-JONES, Mr. MANSELL, Mr. RICHARDSON CARR, Sir RICHARD COOPER, and Major-General BROCKLEHURST in favour of the suggested experiment, and by Mr. MIDDLETON, Lord NORTHBROOK (Chairman of the Veterinary Committee), and Mr. CRUTCHLEY against the suggested experiment. Lord MORETON proposed that a decision as to the carrying out of the experiment should be deferred until the next monthly meeting of the Council. Lord NORTHBROOK having expressed his willingness to accept a suggestion made by Mr. CRUTCHLEY, that the matter should be decided by the Council that day, the original amendment was, by the consent of the meeting, withdrawn.

Mr. ADEANE then moved and Mr. MANSELL seconded:

“That the experiments suggested to the Veterinary Committee, for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents, be referred to the Chemical and Woburn and Veterinary Committees, and that they be asked to carry them out forthwith, at a total cost not exceeding 800*l.* to cover the three years.”

The amendment being put to the vote, was, on a show of hands, declared carried, 21 voting *for* and 14 *against*.

The Report of the Veterinary Committee, subject to the above amendment, was then received and adopted.

The SECRETARY announced that the trustees of the "Queen Victoria Gifts" Fund had decided to make a grant to the Royal Agricultural Benevolent Institution of 110/ for the year 1910.

Other business having been transacted, the Council adjourned until Wednesday, June 1, 1910, at 11 a.m.

THURSDAY, MAY 12, 1910.

At a Special Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart (President), in the Chair:

Present: Trustees. Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, Lord Middleton, Lord Merton.

Vice-Presidents. -H.R.H. Prince Christian, K.G., Mr. C. R. W. Adame, the Rt. Hon. Ailwyn E. Fellowes, the Earl of Northbrook.

Other Members of the Council. Mr. T. L. Aveling, Mr. Richardson Carr, Mr. Howard Frank, Mr. Ernest A. Hamlyn, Mr. J. Howard Howard, Mr. W. A. May, Mr. William Noston, Mr. Frederick Reynard, and Mr. George Taylor.

The following members of the Liverpool Local Committee were also present: The Lord Mayor of Liverpool and Mr. Percy F. Corkhill.

The Secretary reported the receipt of numerous letters and telegrams from Members of the Council expressing sympathy with the object of the meeting, and regret at their inability to be present.

The requisition from the President for summoning the Special Council meeting having been read,

The PRESIDENT rose to propose an address of condolence with His Majesty King George on the death of His late Majesty King Edward the Seventh. He said the duty that devolved upon him was the most solemn which a President of that Society could possibly be called upon to perform. They met together under the shadow of a national sorrow. They mourned the loss not only of their gracious Sovereign, but also of their patron and greatest benefactor. After his all-too-short reign, their beloved Sovereign King Edward the Seventh had passed away so suddenly that as yet they scarcely realised the force of the blow. They were met there that day to place on record as best they could the expression of their profound sorrow for the loss they had sustained. The agricultural community owed a deep debt of gratitude to their late beloved Sovereign. He was ever mindful of the nation's interests, and it was therefore not surprising that he took such a great personal interest in their Society, which devoted its energies to the preservation of England's greatest industry.

They knew that in His Majesty King George the Fifth they possessed one who had always shown himself in active sympathy with the agriculture of the country in general, and with that Society in particular, despite the fact that his duties had called him to other parts of the Empire for such lengthy periods. They might, therefore, rest confident of the future; and he was sure he was speaking the thought which must be present in the minds of them all when he said that they fervently hoped that His Majesty King George might have health and strength to enable him to carry out the almost overwhelming duties with which he was confronted, and still be able to give them not only his patronage, but also his actual support.

At the request of the PRESIDENT, Mr. McIlroy then read the following Address to His Majesty King George:

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

TO THE KING'S MOST EXCELLENT MAJESTY.

May it please Your Majesty:

We, the President and Council representing the general body of Governors and Members of the Royal Agricultural Society of England, desire humbly to approach Your Majesty with the assurance of our loyal and devoted attachment to Your Majesty's Throne and Person, and of our sincere and respectful sympathy with

Your Majesty on the occasion of the grievous loss which the Royal Family have sustained by the death of our beloved Sovereign His late Majesty King Edward, and of our profound sorrow at the sad event which has plunged the whole of the British Empire into mourning.

We desire to pay a humble tribute of loyalty and respect to the memory of a Sovereign who, throughout his life and reign, devoted himself unremittingly to the calls of duty in his exalted station, and who endeared himself to all his subjects by his constant sympathy with both their joys and sorrows.

The Royal Agricultural Society recalls with feelings of pride and satisfaction that His late Majesty had been Patron of the Society during the whole of his reign. When Prince of Wales, he filled the office of President on no less than four occasions, and was a Trustee of the Society. His late Majesty had also graciously consented to become President of the Society for the year, 1911, on the occasion of the Society's visit to Norwich, the capital of the county in which His Majesty had for so many years made his country home.

We beg to assure Your Majesty that the agriculturists of England are devotedly attached to your Throne and Person, and on their behalf we desire respectfully to express our grateful thanks for the gracious interest ever taken by His late Majesty in the welfare of the agriculture of the country.

The Royal Agricultural Society has received so many marks of Royal favour that we venture to express the hope that it may still continue to merit Your Majesty's gracious patronage.

We earnestly pray that the Almighty may vouchsafe to Your Majesty health and strength for many years to come to guide the destinies of the Empire over which Your Majesty has been called to reign.

Given under the Common Seal of the Royal Agricultural Society of England this twelfth day of May, 1910

(L.S.)

Signed { GILBERT GREENALL, President
DEVONSHIRE Trustee
THOS. MCROW, Secretary.

The Duke of DEVONSHIRE said they met there that day, feeling, as he was sure they all did most sincerely, the great loss which the country had sustained. For the members of that Society the loss came with special severity. They all knew the very great interest that His late Majesty took, not only in the affairs of the Royal Agricultural Society, but in the affairs of agriculture as a whole, and in him they had lost one who devoted himself heart and soul to the encouragement of the improvement of agriculture in every form. His Majesty was not only Patron of the Society in name, but also in deed.

His Grace recalled the last occasion on which he had had the honour of meeting King Edward, when His Majesty had asked him a great number of questions as to the prospects of the Show to be held at Liverpool next month, which showed that in spite of his heavy work, the affairs of the Society not only had a place in his mind, but that its welfare was close to his heart. As they all knew, His Majesty had only recently graciously consented to act as President of their Show to be held at Norwich next year, and that showed the deep personal interest which he took in the Society.

They had to offer their sincere condolences with His Majesty King George. They all knew how devoted he was to his late father, and they would all sympathise with him very sincerely in the blow which had fallen upon him. In him they had a real friend of agriculture. They all knew the deep interest he had taken in the Society, and His Grace thought they might rest assured that His Majesty would follow in the footsteps of his father.

Their sincere sympathy—in common with that of everyone throughout the length and breadth of the British Empire—would also be extended to Queen Alexandra in her deep and great sorrow. The letter published in the newspapers yesterday morning from the Queen was one that would strike a deep and responsive note in every heart. His Grace then moved the following address of condolence with Her Majesty Queen Alexandra:—

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

TO HER MOST GRACIOUS MAJESTY QUEEN ALEXANDRA.

May it please Your Majesty:

We, the President and Council representing the general body of Governors and Members of the Royal Agricultural Society of England, beg leave humbly to approach Your Majesty with the assurance of our loyal and devoted attachment

to Your Majesty's person and of our sincere and respectful sympathy on the occasion of the death of His Majesty King Edward, Patron of this Society.

We, in common with all classes of the community, deplore the death of His late Majesty, whose loss will more especially be felt by this Society in which His Majesty had for so many years taken the warmest personal interest.

We recall with feelings of gratitude the many occasions on which Your Majesty accompanied King Edward on his visits to the annual shows of this Society, and the deep interest shown by Your Majesty in the Society's operations for the advancement of agriculture.

In the name, and on behalf of the agriculturists of England we humbly pray that the Almighty may send His Blessing to comfort you in the irreparable bereavement sustained by Your Majesty.

Given under the Common Seal of the Royal Agricultural Society of England this twelfth day of May, 1910.

(L.S.)

Signed { GILBERT GREENALL, President.
DEVONSHIRE, Trustee
THOS. MCROW, Secretary.

Directions were then given for the addresses to be sealed with the Society's Seal, and forwarded to the Secretary of State for the Home Department for humble submission to His Majesty the King and to Her Majesty Queen Alexandra.

The meeting then adjourned.

WEDNESDAY, JUNE 1, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present: Trustees. Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, Lord Moreton, Sir John H. Thorold, Bart. **Vice-Presidents.** Mr. C. B. W. Adame, Mr. Percy Chuteley, the Right Hon. A. E. Fellowes, the Earl of Northbrook, the Hon. C. T. Parker.

Other Members of the Council. Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. Richardson Carr, Sir Richard Cooper, Bart., the Hon. J. E. Cross, Mr. Henry Dudding, Mr. James Falconer, Mr. Howard Frank, Mr. R. M. Greaves, Mr. E. A. Hamlyn, Mr. Joseph Harris, Mr. W. Harrison, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. W. Nocton, Mr. C. M. S. Pilkington, Mr. W. A. Prout, Mr. F. Reynard, Viscount Ridley, Mr. C. C. Rogers, Mr. E. W. Stanforth, Mr. C. W. Tindall, and Mr. C. W. Wilson.

Governor. Mr. Harold Swithinbank.

Mr. Percy F. Corkhill, representing the Liverpool Local Committee.

The SECRETARY read a cabled message received from the Rural Society of Argentina, expressing sorrow at the death of His late Majesty, and conveying their condolence with the Society in the loss sustained by them, and by the country at large; and it was resolved that the Secretary be instructed to send a suitable acknowledgment to the Argentine Society.

The PRESIDENT announced that Mr. Fellowes had received a letter from Sir Arthur Bigge, stating that His Majesty King George V. had much pleasure in accepting the position of President of the Society in 1911, when the Show would be held in the City of Norwich. He (the President) was sure that the Council were all exceedingly gratified that His Majesty was going to do so, and it would doubtless be their wish that he should write a letter acknowledging His Majesty's gracious act.

Mr. J. W. Paton, 18, Seaside Road, Southport, was elected a Governor, and 115 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted; and on the motion of Mr. ADAME, seconded by Sir JOHN THOROLD, it was resolved: "That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society, on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a

member during the forthcoming Show at Liverpool; the formal election of such candidate to be considered by the Council at their next ordinary meeting."

In presenting the Report of the General Liverpool Committee, which was adopted, the Duke of DEVONSHIRE took the opportunity of saying how grateful they all were to the Lord Mayor of Liverpool for the trouble he had taken. In spite of the heavy work which fell to his lot, he had entered heart and soul into everything calculated to help the forthcoming Show, the success of which would be largely due to his efforts, and the way in which he had been supported by the Local Committee, to whom the Society owed a deep debt of gratitude.

The Report of the Veterinary Committee was received and adopted, including the following minute with regard to the Demonstration with Calves sanctioned by the Council at their last Meeting:—

"The Committee unanimously desire to place on record their opinion, and that of their Veterinary Advisor, that the proposed demonstration is from the veterinary point of view, unnecessary, and the reasons adduced in support of it, do not justify the proposed expenditure on either educational or practical grounds.

"They further desire to protest against the decision of the Council to incur a large expenditure in demonstrating acknowledged facts, while the requests recently made by the Committee for a smaller sum for the purpose of aiding useful veterinary research and investigation have been refused."

Lord NORTHBROOK, in moving the adoption of this report, pointed out that the Committee had carried out the instructions of the Council to make arrangements for the proposed demonstration with calves by appointing four Members to serve on a Joint Committee. He desired to add to the four gentlemen mentioned the names of Mr. Carr and Mr. Adeane, who had taken a great interest in this movement, and he understood that Mr. Bowen-Jones would be willing to second the proposal. His Lordship quoted a Memorandum by Sir John McFadyen containing suggestions for carrying out the proposed demonstration, and made an explanatory statement with regard to the expressions of opinion contained in the Committee's Report. After remarks by Mr. HAROLD SWITHINBANK (Governor) the report of the Veterinary Committee was received and adopted; and it was moved by Lord NORTHBROOK, seconded by Mr. BOWEN-JONES, and resolved, that a Committee be appointed to carry out the proposed experiment with calves, consisting of Lord Northbrook, Sir John McFadyen, Mr. Alfred Mansell, and Mr. Harold Swithinbank, representing the Veterinary Committee, and Mr. Bowen-Jones, Mr. Reynard, Mr. Luddington, and Dr. Voelcker, representing the Chemical and Woburn Committee, with Mr. Adeane and Mr. Richardson Carr.

Mr. ROGERS mentioned that since the last meeting of the Council he had met representatives of the Lancashire branch of the Royal English Arboricultural Society for the purpose of arranging the itinerary of the judges of the Plantation and Nurseries Competition. The Judges had now completed their inspection, and their awards would be made known in due course.

Other business having been transacted, the Council adjourned until the week of the Liverpool Show.

THURSDAY, JUNE 23, 1910.

At a meeting of the Council held in the Showyard at Liverpool, Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present:—Trustees.—Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, Lord Middleton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr C. R. W. Adeane, Mr. Percy Crutchley, the Hon. Cecil T. Parker.

Other Members of Council. Mr. D. T. Alexander, Mr. T. A. Buttar, Mr. R. G. Carden, Sir Richard P. Cooper, Bart., the Hon. J. E. Cross, Mr. Howard Frank, Mr. W. T. Garne, Mr. E. A. Hamlyn, Mr. Joseph Harris, Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. W. A. May, Mr. T. S. Minton, Mr. William Nocton, Mr. C. M. S. Pilkington, Mr. G. G. Rea, Mr. F. Reynard, Mr. C. Colman Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. C. W. Wilson, Mr. L. G. Wrigley.

The minutes of the last meeting of the Council, held on June 1, 1910, were taken as read and approved.

Letters were read from the Secretary of State for the Home Department, conveying, on behalf of The King and of Queen Alexandra, Their Majesties' thanks for the Society's Addresses of Condolence on the occasion of the lamented death of His late Majesty King Edward the Seventh.

The PRESIDENT reported the receipt of a letter intimating that HIS MAJESTY KING GEORGE THE FIFTH had been graciously pleased to become Patron of the Society in succession to the late King Edward.

On the motion of Mr. ADEANE, accounts amounting in all to £2,385 3s. 11d. were passed for payment.

In view of the necessity for the Society's Showyard Buildings and Plant to be removed without delay from Liverpool to Norwich, authority was given to the Honorary Director to settle the Contract for the erection of the Showyard of 1911.

A letter was read from Lord Rothschild, expressing his Lordship's willingness to undertake to procure and send to the Woburn Farm, free of all expense to the Society, thirty calves for the proposed demonstration to be carried out in order to show that it is possible for calves which are the off-spring of tuberculous cows to be brought up, under proper conditions, free from disease.

Mr. BOWEN-JONES said he was sure the generous offer of Lord Rothschild would be fully appreciated by the Council. Not only would it relieve the Society of considerable financial cost, but it would also facilitate the carrying out of the experiments very much more completely than if the Council were thrown on their own resources. They would wish to respond to the generous offer made to them, and he therefore moved a hearty vote of thanks to Lord Rothschild for his liberality. Mr. ADEANE seconded the motion, which was unanimously adopted.

On the motion of the Duke of DEVONSHIRE, seconded by the Hon. GROLL T. PARKER, it was unanimously resolved:

- "That the best thanks of the Society are due and are hereby tendered to
- (a) The Officials at the General Post Office for the efficient postal and telegraphic arrangements.
 - (b) The Chief Commissioner of Police for the efficient services rendered by the detachment of Metropolitan Police on duty in the Showyard.
 - (c) The Chief Constable of the City of Liverpool for the efficient police arrangements in connection with the Show.
 - (d) The Liverpool Brigade of the St. John Ambulance Association for the efficient Ambulance arrangements.
 - (e) The Bank of Liverpool, Limited, for the efficient service rendered by their officials.
 - (f) Messrs. Shand, Mason & Co., for the provision of Fire Engines and for the efficient arrangements in connection with the Fire Station in the Showyard.
 - (g) Mr. Ralph Johnson, of Warrington, for decorating and furnishing the Royal Pavilion.
 - (h) Messrs. Dicksons, Limited, for providing the Floral Decoration near the Pavilions, &c.
 - (i) Messrs. Ruston, Proctor & Co., Limited, for the loan of a Steam Engine for supplying Motive Power to the Dairy."

Letters of thanks were also ordered to be addressed to various other individuals and firms for assistance rendered in connection with the Show.

The Council then adjourned until 11 a.m. on Wednesday, July 27, 1910, at 16 Bedford Square.

Proceedings at General Meeting of Governors and Members,

HELD IN THE
LARGE TENT IN THE SHOWYARD AT LIVERPOOL,

THURSDAY, JUNE 23, 1910.

SIR GILBERT GREENALL, BART (PRESIDENT), IN THE CHAIR.

Amongst those present on the platform were : The Duke of Devonshire, the Earl of Coventry, the Hon. John R. de C. Boscawen, the Hon. John E. Cross, the Hon. Cecil T. Parker, Sir Richard P. Cooper, Bart., Sir John H. Thorold, Bart., Sir Thomas Elliott, K.C.B., Mr. Charles R. W. Adeane, Mr. D. T. Alexander, Mr. J. Bowen-Jones, Mr. Thomas A. Butlar, Mr. F. S. W. Cornwallis, Mr. Percy Crutchley, Mr. Howard Frank, Mr. J. W. Glover, Mr. Ernest A. Hamlyn, Mr. Joseph Harris, Mr. J. H. Hine, Mr. Arthur Hiseock, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Ernest Mathews, Mr. W. A. May, Mr. T. S. Minton, Mr. William Nocton, Mr. G. G. Rea, Mr. Frederick Reynard, Mr. Charles Coltman Rogers, Mr. C. W. Wilson, with the Lord Mayor of Liverpool (Alderman H. W. Williams) representing the Local Committee.

There was also a large attendance of Governors and Members in the tent.

President's Introductory Remarks.

The PRESIDENT said they met together that day under the shadow of a very great loss, which the Royal Agricultural Society felt with the nation at large. His late Majesty King Edward always took the very deepest interest in agriculture, and it would be hardly necessary for him (the President) to remind them how closely the late King had identified himself with that Society. As Patron, as President, as a Member of the Council, and as Exhibitor, His late Majesty had been ever anxious for the success of the Society and for the great interests it represented. Their Society had been exceptionally favoured by the Patronage of the Royal Family, and ever since its incorporation in the year 1840 the reigning Monarch had always been its Patron. They would all be glad to hear that King George had been graciously pleased to become Patron of the Society. This year they were fortunate in having that very fine showyard, which had been so generously given up by the people of Liverpool for the Society's use. They had every reason to congratulate themselves upon a magnificent Exhibition, which he thought he could safely say had never been excelled. There was a large number of Colonial and foreign agriculturists present, and it was pleasing to meet them and hear their views, which he thought he was right in saying were all of a very appreciative character. They had been honoured by the gracious acknowledgment of the Society by his Majesty in deputing Prince Arthur of Connaught to attend the Show as his representative. He was sure it had given the members of the Society great pleasure to have Prince Arthur with them ; and the great interest which he took in the Show was evidenced by the fact that His Royal Highness was paying a second visit that morning.

Farm Prizes.

The SECRETARY then read the awards of the judges in the competition for the best-managed farms in Lancashire and Cheshire, which will be found at pp. 241 and 242.

Thanks to Lord Mayor and Corporation.

The Earl of COVENTRY had great pleasure in rising to move : "That the best thanks of the Society are due and are hereby tendered to the Lord Mayor and Corporation of Liverpool for their cordial reception of the Society." He was quite sure that all members of the Society would heartily support the

resolution, because, in the first place, their best thanks were due to the Lord Mayor and to the Corporation for having been instrumental in securing for them such an excellent showyard. He did not think he had ever seen a better one. Next he thought they were all very much indebted to the Lord Mayor for his hearty hospitality and the welcome given to members of the Society, and he was sure they would all carry away with them a grateful recollection of the way in which they had been received in Liverpool.

Mr. PERCY CRUTCHLEY cordially seconded the resolution proposed by Lord Coventry. There was very little to add to what his Lordship had said, but he would like to refer to one other matter. Not only had the Lord Mayor done all that Lord Coventry had mentioned, but he had also given them the value of his assistance and advice by constantly attending the meetings of the Council of the Society in London, which was, for a busy man, a considerable task, and showed how very heartily he had thrown himself into the success of that great exhibition.

The resolution having been submitted to the meeting and carried unanimously,

The LORD MAYOR OF LIVERPOOL expressed thanks on behalf of himself and the Corporation. The little he had himself been able to do amounted to a very trifling matter, but he must admit that the public of Liverpool and the Corporation had made considerable sacrifices for the Show. The ground on which they were was known as the Wavertree Mystery, and was dedicated as a playground for children, so that the holding of the Show had to a certain extent deprived them of their pleasures. He was sure they were all glad to have been able to assist in making the Show a success, and they had been amply repaid in the Show itself. Unfortunately they had no control over the weather, which had been rather bad on the previous day. If, however, they were favoured with fine weather for the rest of the week the Show was bound to be a success. It was a great pleasure to the people of Liverpool to have the Show in their midst.

Thanks to Local Committee.

Mr. F. S. W. CORNWALLIS proposed: "That the best thanks of the Society are due and are hereby tendered to the Liverpool Local Committee for their exertions to promote the success of the Show." The resolutions passed at such a meeting as that seemed, perhaps, somewhat formal, but those who knew the work done by the Local Committee were aware what a large part they played in the management of the Show and the important duties that devolved upon them. They had journeyed to London to attend meetings, given the Society handsome prizes, and, as had already been mentioned, had made arrangements for the valuable site on which the Show was held. They had co-operated in every way to make the Show a success, and he was sure they shared the wish that at the end of the week the financial result might be such that Liverpool would go down to posterity as establishing a record in the history of the Society.

Mr. FREDERICK REYNARD said that no words were required from him to supplement what had fallen from Mr. Cornwallis, who had expressed exactly the feelings of the Council with regard to the Local Committee. He had great pleasure in seconding the resolution.

The motion was put to the meeting and unanimously agreed to.

The LORD MAYOR OF LIVERPOOL thanked them very sincerely for the vote of thanks to the Local Committee. It was true he had been Chairman of that body, but he could not claim very much credit for the good results and the good work of the Local Committee. Everything possible had been done to make the Show a success, and he hoped it would prove as satisfactory as they desired it to be.

Thanks to Railways.

The Duke of DEVONSHIRE said that, in rising to propose that the best thanks of the Society be tendered to the various railway companies, he hoped

that none of those present would be under the impression that it was necessary to get a railway director to move this resolution. They, as members and as exhibitors, had to thank the companies for the facilities afforded by them. Speaking in another capacity (as a railway director), he could assure them that he and his colleagues throughout the country would always do their best to support the Show in every possible way they could.

Mr. JOSEPH HARRIS formally seconded the motion, which was carried.

Tuberculosis Experiments.

The usual inquiry having been made from the Chair as to whether any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council,

The Rev. C. H. BROCKLEBANK rose, as an ordinary Member, to protest against the proposal of the Council to spend 800*l.* on tuberculosis experiments. Most of them were practical cattle-breeders, and they did not think the experiments would result in any practical good. He also observed that the Veterinary Committee did not recommend the experiments, but the Council had over-ruled them, and pledged the Society to this expenditure. He thought he was voicing the feelings of the ordinary Members when he said he did not think that a sum of 800*l.* ought to be spent in this manner without their having something to say about it.

The PRESIDENT said that Mr. Brocklebank's remarks should receive the consideration of the Council.

Thanks to President.

Sir THOMAS ELLIOTT said it was his very great privilege to move a hearty vote of thanks to their President, Sir Gilbert Greenall. Most of them had followed with the greatest anxiety and interest the fortunes of the Royal Agricultural Society, and they knew how great was their debt to Sir Gilbert Greenall. Sir Gilbert had been the very life and soul of the Society during the past few years, when it had been engaged in what was almost a struggle for existence. He had shown himself a born leader of men. He had known how to attract to himself comrades who recognised the value of the work of the Society, and who were determined that it should not fall, but once again be placed on the high level of prosperity. They recognised that Sir Gilbert possessed qualities of which all Englishmen might be proud. He was genial, courageous, and showed great energy and ability in the discharge of his duties. Happily this was not the time to write his epitaph, but if he could only live to read his epitaph, he (Sir Thomas) was sure it would make Sir Gilbert blush.

Mr. JAMES WATT (Charles) associated himself with every word Sir Thomas Elliott had said about Sir Gilbert Greenall, and, as a regular attendant at the Shows for nearly forty years, he had the greatest possible pleasure in seconding the motion. In Sir Gilbert they had a man of great agricultural enthusiasm and great enthusiasm for any cause he adopted. He possessed energy, ability, and everything required to preside over a great historic institution like the Royal Agricultural Society. He (Mr. Watt) had been listening to the criticism of people, and as a member of the general public he was unable to find a weak spot or any single complaint in the conduct of that great institution. The Society, in the last few years, had jumped from adversity to great prosperity and influence, and he hoped that Sir Gilbert would be spared to go on with the good work he had in hand, and to do even more than he had done in the past.

The SECRETARY then put the motion, which was carried by acclamation.

Sir GILBERT GREENALL said he appreciated very highly the kind way in which they had passed the resolution, and he thanked Sir Thomas Elliott and Mr. Watt for their kind expressions towards him. He felt it a great honour indeed to be the President of that Society, and he felt the honour all the more strongly because the Show this year was held in the neighbourhood in which he lived. During the past few years they had done very well. Every Member of

the Council had been determined to pull the Show round, and those who were at one time in favour of a Show at some fixed place had now thrown in their lot, and were doing everything they could to make the migratory system a success. They all hoped that Show would be a great success, and that the Shows would be successful for many years to come. He could assure them that as long as they did him the honour of having him as Honorary Director he would leave nothing undone on his part to make it so. Before he sat down he desired to thank all those with whom he had come in contact in Liverpool, and in Lancashire and Cheshire, in connection with that Show. Everything he had suggested that was possible to do had been done by the agriculturists in that part of the world. They had done all they could, and now only three fine days were wanted to make the Show a success.

The meeting then terminated.

WEDNESDAY, JULY 27, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present:—Trustees. H.R.H. Prince Christian, K.G., Mr. J. Bowen-Jones, the Earl of Coventry, the Duke of Devonshire, Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents. Mr. C. R. W. Adcane, Sir Richard Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Earl of Northbrook.

Other Members of the Council. Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. R. G. Carden, the Hon. John E. Cross, Mr. Henry Dudding, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. E. A. Hamlyn, Mr. Joseph Harris, Sir A. G. Hazlerigg, Bart., Major H. G. Henderson, M.P., Mr. J. H. Hine, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. H. F. Plumptre, Mr. F. Reynard, Viscount Ridley, Mr. G. G. Rogers, Mr. Fred Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler.

In opening the proceedings, the PRESIDENT made sympathetic reference to the death, since the last meeting, of Mr. Herbert Tallent, who had represented the Division of Norfolk on the Council since 1905.

The minutes of the last meeting of the Council, held in the Showyard at Liverpool on Thursday, June 23, 1910, were taken as read and approved.

Eighty-six duly nominated candidates were admitted into the Society as Members under By-law 2, and one Member was re-elected under By-law 11.

The Report of the Finance Committee was received and adopted; and on the motion of Mr. ADCANE, seconded by Sir JOHN THOROLD, it was resolved: "That in order to facilitate the winding up of the accounts for the Liverpool Show as early as possible, authority be given for the issue, during the recess, of orders on the Society's Bankers for the payment of accounts connected with the Show."

On the motion of Sir JOHN THOROLD, seconded by Mr. ADCANE, it was unanimously resolved:

1. That HIS ROYAL HIGHNESS PRINCE CHRISTIAN, K.G., be elected a Trustee; and
2. That Sir RICHARD COOPER, Bart., be elected a Vice-President of the Society.

A Report from the Special Committee was received and adopted, including a recommendation that a further sum of 200*l.* per annum should be granted to the Royal Veterinary College for three years, commencing on January 1, 1911, for investigations with regard to Johne's disease, an obscure disease of sheep in the north of England, and Vaccination as a preventive against Tuberculosis.

A Report was presented and adopted from the Farm Prizes Committee with regard to the Prizes to be offered by the Norwich Local Committee for the best managed farms in the Counties of Norfolk and Suffolk.

Authority was given for the sealing of the Agreement with the Corporation of Norwich in connection with the holding of the Society's Show of 1911 in that city.

Other business having been transacted, the Council adjourned, over the Autumn recess, until November 2, 1910.

WEDNESDAY, NOVEMBER 2, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair:—

Present:—Trustees—Mr. J. Bowen-Jones, the Earl of Coventry, the Duke of Devonshire, Lord Middleton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. O. R. W. Adenae, Mr. Percy Clutchley, the Right Hon. A. E. Fellowes, the Earl of Northbrook, the Hon. C. T. Parker.

Other Members of the Council—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. T. A. Buttar, Mr. Henry Dudding, Mr. J. T. G. Radie, Mr. James Falconer, Mr. Howard Frank, Mr. J. W. Glover, Mr. R. M. Greaves, Mr. E. A. Hamlyn, Sir A. G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. O. Middleton, Mr. T. S. Minton, Mr. C. M. S. Pilkington, Mr. W. A. Prout, Mr. G. G. Rea, Mr. F. Reynard, Mr. C. C. Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. H. H. Smith, Mr. E. W. Stanforth, Mr. George Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, and Mr. L. C. Wrigley.

The Lord Mayor of Liverpool and Mr. Percy F. Corkhill were present, representing the Liverpool Local Committee.

The following members of the Norwich Local Committee also attended: Lord Hastings, Mr. H. P. Blofield, Mr. G. M. Chamberlin, Mr. Henry Overman, and Mr. E. W. Beck (Local Secretary).

The **PRESIDENT**, in opening the proceedings, said that since their last meeting a great sorrow had befallen the Royal Family by the death of Prince Francis of Teck, the brother of Her Majesty Queen Mary. He was sure that the deepest sympathies of the Council had been with their Majesties the King and Queen in their bereavement, and he begged to propose from the chair the following resolution, which was unanimously carried, all the members standing:—

"That this Council desire to place on record their deep sense of sorrow for the death of His Serene Highness Prince Francis of Teck, and to convey their respectful sympathy to His Majesty the King and Her Majesty Queen Mary in the sad loss which they have sustained."

The minutes of the last meeting of the Council, held on July 27, 1910, were taken as read and approved.

Forty-two duly nominated candidates were admitted into the Society as Members under By-law 2, and one Member was re-elected under By-law 14.

In presenting the report of the Finance Committee, Mr. ADENAE stated that the profit on the Liverpool Show was approximately 5,100/. The Council, he was sure, would like to take advantage of the occasion to thank the City of Liverpool and the whole County of Lancaster for the splendid reception given to the Society in connection with the Show. The result announced could not possibly have been achieved without the most hearty co-operation of the Corporation of Liverpool and the Local Committee: the Lord Mayor had been at the head of both those bodies—with the Council. It was a pleasant task to the Council to thank the Lord Mayor personally for all he had done for the Society, and to congratulate him on the result of his efforts. The **PRESIDENT** also expressed his personal thanks to the Lord Mayor, the Corporation, Officials, and the citizens of Liverpool. He also desired to

say one word for the Lord Mayor's Secretary, Mr. Percy Corkhill, who had done so much to make matters run smoothly, and for the Chairman of the Parks Committees and others connected with the Playground on which the Show was held. They all deserved the Council's most hearty thanks, which he was sure they would receive. Their thanks were also due to the poorer inhabitants of the Wavertree district for the very enthusiastic way in which they had supported the Show and had given up what was to them a very great place—the only playground in that neighbourhood.

The LORD MAYOR OF LIVERPOOL having thanked Mr. Adeane and the President for the very kind way in which they had alluded to himself and to the citizens of Liverpool, the Report of the Finance Committee was received and adopted.

The SECRETARY read a letter from the Lord Mayor of Bristol containing a resolution which had been submitted to a public meeting of citizens held at the Guildhall on October 19, 1910, and unanimously carried in the following terms:—"That a cordial invitation be extended to the Royal Agricultural Society to hold their Annual Show at Bristol in the year 1913." The site proposed to be offered would be on the Clifton and Durdham Downs, which was the same ground as that occupied by the Society on the occasion of the Show in 1878.

The Duke of DEVONSHIRE was sure it would be the wish of the Council that the very kind and cordial invitation so spontaneously offered by the Lord Mayor and inhabitants of Bristol should be accepted. He was certain they would all, throughout the country, be delighted to accept the invitation extended to them. The enthusiasm of the people of Bristol was well known, and the Society would be doing right to hold its Show there. He had great pleasure in moving that the invitation be accepted.

Sir JOHN THOROLD was pleased to recollect having been at the Show on Clifton Downs some years ago. He did not think they could have a better showground and they could not do better than accept the invitation which had been so heartily extended by the City of Bristol. It afforded him much pleasure to second the motion, which was then unanimously adopted by the Council.

On the motion of the Earl of NORTHBROOK, seconded by Mr. REA, it was unanimously resolved:—

"That, for the protection of our herds and flocks, and in order to prevent the spreading of foot and mouth disease and anthrax, it is of the greatest importance that all ships, wagons, and other vehicles which have carried foreign skins, wool, or other substances likely to bring or spread disease, should be thoroughly disinfected before being used for the purpose of carrying cake, feeding stuffs, or materials used in the manufacture of feeding stuffs."

"Further, that it is desirable if possible, to prevent the carriage of skins, wool, &c., on the same ships as cake and other feeding materials; or, if they must be carried on the same boats, that adequate precautions should be taken to prevent the contamination of feeding stuffs."

Copies of this resolution were ordered to be forwarded to the Board of Agriculture and the Board of Trade.

A report from the Calf (Tuberculosis Experiment) Committee was received and adopted. Lord NORTHBROOK, in presenting this Report, said he thought he was right in saying that at the meeting of the Council held in the Liverpool Showyard, thanks were expressed to Lord Rothschild for his generosity in this matter. Without the co-operation and assistance they had received from Lord Rothschild, through Mr. Richardson Carr, in providing calves for the experiments, the work of the Committee would have been of a much more difficult nature at the present time. He was sure that the members of the Committee and the Council were very much obliged to Lord Rothschild for the assistance he had given.

Authority was given for the sealing of the agreement with the Corporation of Doncaster in connection with the holding of the Society's Show of 1912 in that town.

The report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 3 p.m., on Wednesday, December 7, was prepared and ordered to be issued.

Other business having been transacted, the Council adjourned until Wednesday, December 7, at 11 a.m.

WEDNESDAY, DECEMBER 7, 1910.

At a Monthly Council, held at 16 Bedford Square, W.C., Sir GILBERT GREENALL, Bart. (President), in the Chair.

Present :—Trustees.—Mr. F. S. W. Cornwallis, the Earl of Coventry, Lord Moreton.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. A. E. Fellowes, the Earl of Northbrook.

Other Members of the Council.—Mr. D. T. Alexander, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Butlar, Mr. Howard Frank, Mr. W. T. Garne, Mr. E. A. Hamlyn, Lord Harlech, Sir A. G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. Baynton Hippiasley, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. T. S. Minton, Mr. W. Nocton, Mr. Henry Overman, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. G. G. Rea, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. Fied Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. E. V. V. Wheeler, and Mr. L. C. Wrigley.

The following members of the Norwich Local Committee were also present :—The Lord Mayor of Norwich, Mr. H. P. Blofield, Mr. A. H. Miller, and Mr. E. W. Beck (Local Secretary).

The minutes of the last meeting of the Council, held on November 2, 1910, were taken as read and approved.

Lord Egerton of Tatton and Mr. E. G. Wilmot-Sitwell were elected as Governors, and 193 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted, together with the accounts of the Liverpool Show, respecting which an explanation was made by the Chairman of the Committee. They must make some acknowledgment, Mr. ADEANE said, to those to whom the success was principally due, and he knew they would all like to compliment very much their President (Sir Gilbert Greenall). He had carried out with the greatest ease the two very onerous positions of President and Honorary Director, and to the extreme satisfaction of every Member of the Royal Agricultural Society.

Sir GILBERT GREENALL acknowledged the kind words that had fallen from Mr. Adeane, and the very kind way in which they had been received by the Council. He could only tell them that it had been a very great pleasure to him to hold the position of President at the same time as the office of Honorary Director, and if he had met with the approval of the Council and Members it was a matter of satisfaction to himself. He was grateful for the support which the Council had given him, and as long as he held the position of Honorary Director he would always do his best to make every Show a success.

On the motion of Mr. ADEANE, seconded by Mr. FELLOWES, it was resolved that the sum of 8,500l. be invested in Consols.

The CHAIRMAN said they had the pleasure to see among them that day Lord Harlech, Mr. Davis Brown, Mr. G. Norris Midwood, and Mr. Henry Overman, new members of the Council, and he was sure they would all receive a very hearty welcome to the deliberations of the Society.

The following Standing Committees were appointed for 1911 :—Finance, Journal and Education, Chemical and Woburn, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, and Dairy and Produce. The present members of the various Standing Committees were (with some exceptions) reappointed to those Committees. Mr. R. A. Cooper, M.P., was added to the Journal and Education, Botanical and Zoological, and Veterinary Committees; Mr. G. Norris Midwood to the Chemical and Woburn, and Stock Prizes Committees; Mr. Davis Brown to the Botanical and Zoological, and Veterinary Committees; Lord Harlech to the Stock Prizes Committee; Mr. Henry Overman to the Stock Prizes, Showyard Works, and Dairy and Produce Committee; Lord Middleton, Mr. William Harrison, and the Hon. J. E. Cross to the Committee of Selection; and Mr. William Norton to the Dairy and Produce Committee.

The SECRETARY reported the receipt by the President of a letter from the Secretary of State for the Home Department to the effect that he had had the honour to lay before the King and Queen the loyal and dutiful resolution of the Council expressing condolence with their Majesties on the death of His Serene Highness Prince Francis of Teck, and that their Majesties had been pleased to receive the same very graciously.

The receipt was also reported of a letter from Earl Spencer, who had presented to the Society a number of volumes of the Society's publications belonging to the late Earl Spencer, together with portraits of the third Earl (the first President of the Society) and of the fifth Earl, who was President of the Society in 1898.

Other business having been transacted, the Council adjourned until Wednesday, January 25, 1911.

Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON,

WEDNESDAY, DECEMBER 7, 1910.

Mr. F. S. W. CORNWALLIS (Trustee) in the Chair.

Present: *-Trustee.* -Lord Moreton.

Vice-Presidents. Mr. G. R. W. Adams, Sir Richard P. Cooper, Bart., the Right Hon. A. E. Fellowes.

Other Members of the Council. -Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Mr. T. A. Buttar, Mr. J. Falconer, Lord Harlech, Mr. J. H. Hine, Mr. R. W. Hobbs, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. G. Norris Midwood, Mr. T. S. Minton, Mr. W. Norton, Mr. H. Overman, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. F. Reynard, Mr. Fred Smith, Mr. O. W. Tindall, Mr. E. V. V. Wheeler, and Mr. G. W. Wilson.

Governors. The Earl of Leicester, G.C.V.O., C.M.G., Mr. Terah F. Hooley, Mr. G. L. Prior.

Members. Sir Herbert Chermiside, G.C.M.G., G.C.B., Messrs. W. Bainbridge, G. J. Baly, George Barbour, W. Worby Beaumont, E. W. Beck, N. Benjafield, G. W. Bennett, W. J. Bennison, Russell Beverley, B. G. O. Bolland, E. W. Coddick, F. J. Casserley, A. E. Chasemore, W. Cook, Cooper Corbridge, Major P. G. Craigie, G.B., Messrs. W. H. Dunn, F. F. Downward, G. Drewry, E. G. Duleken, John Evans, Lieut.-Colonel G. J. Ferguson-Buchanan, G. Fiske, F. L. Gooch, E. Gravett, J. E. Grove, N. S. Harrison, H. Hailey, H. G. Horns, W. Hitch, A. Hoffmann, H. W. Jeans, F. H. Jennings, Dunbar Kelly, John Kendrick, W. Langridge, James Lawrence, James Lay, J. S. Ledbrook, G. R. Liddell, W. G. Loxley, C. J. B. Macdonald, K. J. J. Mackenzie, James Mann,

C. W. Marsters, Joseph Martin, J. H. Master James McCreath, John McLaren, Walter Mead, J. Meiters, A. C. Moore, C. Morris, J. M. Moubay, G. G. Owen, Professor J. Penberthy, Messrs. J. G. Randall, J. R. Rawlence, John Richards, W. Robson, Dr. B. Skalweit, Messrs. H. S. Warren Smith, A. J. Stanton, R. Stratton, Daniel Swaffer, E. R. Berry Torr, E. Trimen, E. Van Brabant, Eldred G. F. Walker, Martin H. Ward, Thomas Warne, Edwin Watson, Arthur Westrop, &c., &c.

In the unavoidable absence of the President (Sir Gilbert Greenall, Bart.), Mr. F. S. W. CORNWALLIS was called to the Chair, on the motion of Lord MORETON, seconded by Mr. H. DENT BROOKLEHURST.

H.M. the King as President for 1911

Mr. CORNWALLIS said that as would have been observed from the Agenda, he was privileged, on the President's behalf, to announce that His Majesty the King had been graciously pleased to accept the Presidency of the Society for the year 1911, when the Annual Show will be held at Norwich, in the County in which His Majesty has made his country home. It would be unbecoming of him at that meeting to enlarge on the great interest which the late King, their Patron, His Majesty, and other members of the Royal Family, had always taken in the Society and in the welfare of the agriculture of this country, as this was a fact which was so well known to and acknowledged by everyone connected with the great agricultural industry; but he might perhaps be allowed to say that ever since its incorporation the Society had enjoyed the active patronage and cordial co-operation of the reigning Monarch. He had the honour, therefore, to move the following resolution from the Chair :-

"The Royal Agricultural Society of England, in general meeting assembled, receive with feelings of the greatest gratification and high appreciation the announcement that His Majesty the King has been graciously pleased to accept the office of President of the Society during the year of His Majesty's Coronation, when the Annual Show will be held at Norwich."

The resolution was then put and carried by acclamation.

The CHAIRMAN said that before presenting the Balance-sheet he would like to express his regret at the absence of some of his colleagues, who would otherwise have occupied his position. He was not sure that some of them were not engaged in an occupation which was strictly prohibited by their Charter. (Laughter.) But they especially missed their President, to whom in person they would have liked to offer their congratulations on the success which had marked the year that had seen him fill with so much distinction the double office of President and Honorary Director. They hoped that for many years they might subscribe "No Change" to Sir Gilbert's name as their Honorary Director.

Accounts.

He then presented the Balance-sheet. Printed copies of the accounts connected with this year's show at Liverpool were in the hands of those present. As would be seen, the Show notwithstanding the fact that rain fell heavily on three of the five days the Exhibition was open had resulted in a credit balance of 5,182*L.*, which, he was sure they would all agree, was highly satisfactory. The Show itself was one of the finest that had ever been held, and their most hearty thanks were due to the Lord Mayor, Corporation, Local Committee, and Officials of Liverpool, and to all the inhabitants of the city and of the counties of Lancaster and Chester for the whole-hearted manner in which the Show had been supported. The President had asked him to say that the result of the Society's visit to his county had afforded him the greatest gratification. Their Show would be held next year at Crown Point, Norwich, on land kindly placed at the Society's disposal by Mr. Russell J. Colman. With His Most Gracious Majesty the King at the head of the Society in the year of his Coronation, the Show should be one of the most notable in the history of the Society. The Prize Sheet, which would be issued in January, had been framed upon very generous lines. The Society's grant for prizes had this year been increased to 5,500*L.*, in addition to which there would be handsome

contributions from the Norwich Local Committee and from the various breed societies. In the year 1912 the Society would visit Yorkshire, it having been decided to hold the Show on the Town Moor at Doncaster.

Membership.

There was just one other matter he would like to touch upon before he sat down, and that was the old question of the number of Members of the Society. When the Council drew up their Report for circulation to the Members they were only able to give the total membership as 9,981. They would, he knew, all of them be pleased to hear that at the Council meeting that morning thanks to the efforts made by Mr. Ailwyn Fellowes, Sir Dighton Probyn, and other Members they had elected a further 193 new subscribers, including two Governors, so that the total membership for the first time since 1901 had reached five figures. Gratifying as this was, he would like to remind them that they were still a long way behind the total of 11,223, the numbers on the register in the year 1897, when his Majesty the King, as Duke of York, occupied the Presidential Chair. He therefore appealed to the Members of the Society to bring to the notice of their friends the objects of their National Agricultural Institution, with the view of raising the number of Members to a greater total than they had hitherto been able to do, and thereby signalise the third term of office of His Majesty the King.

Adoption of Report.

Major CRAIGIE said it was with great gratification that, as a pretty old Member of the Society, he had the honour to move the adoption of the Report which was in their hands, and which testified, without words from him, to the good work, practical and scientific, which had been accomplished by the Council during the past year. He thought there were very few Members of the Society who were not gratified at the announcement which had been made from the Chair, and at the history which appeared in the paragraphs of the Report. They were all very gratified at the announcement made as to His Majesty's gracious intention of taking the Presidency of that great Society. He hoped that the augury of royal patronage to be bestowed on the Society would result in their having at Norwich an absolutely record Show in a record agricultural part of England. He had been connected with a variety of other agricultural associations, but he would like to tell his good friends in that room that he had belonged much longer to the Royal Agricultural Society than to any other agricultural institution in the country. He could go back in his memory to 1866, and he had attended the meetings held since that time. It was a matter of gratification to him to see how much the Society had revived and recovered its old position as the pioneer and teacher of agricultural work. The Liverpool Show had certainly given results of a most satisfactory character. The Norwich Show, coming as it would do almost as a sequel to, and as a part of, the great festivities of the Coronation, ought to draw an enormous concourse of agriculturists to this country. He had gathered from Mr. Fellowes the previous evening that one of the most interesting features of the Show would be the attendance of the Agricultural Ministers of the overseas Dominions who would be in the country. The more they looked at the growth of the British Empire and the growth of agriculture in the Empire the more it would be seen that the Society could play a part, not only in its own country, but in encouraging and assisting the Colonies.

The paragraphs of the Report were too numerous to be dealt with, and he could not find one that suggested itself for criticism. He would like to mention the new departure taken in the country by the creation of the Development Commission, and the good work which the Council had done in at once setting itself to influence the distribution of the fund, which at last they had every hope would be distributed for agricultural research and agricultural development. He thought the Society might play a great part in that direction; and knowing as he did, and having so many friends on

the Council, he thought the Members could cordially support the Society in what they were doing in that connection. The occurrence of the "Jubilee" of the Royal Agricultural Benevolent Institution had been properly chronicled in the Report, and he thought they would all appreciate the assistance which had been given to an Institution which did such good work. He would also like to refer to the unfortunate outbreak of Foot-and-Mouth Disease in Yorkshire in the course of the past year. No doubt it was only a raid and not an invasion, but he thought the Society and the Council were gratified to know that it had been promptly grappled with by the authorities responsible, and that they were saved from the spreading of a grave disease. As an old Member of the Society, and one who rejoiced in its present prosperity, it gave him the greatest pleasure to move the adoption of the Report.

Mr. CHARLES L. PRIOR (Lincoln) had much pleasure in seconding the adoption of the Report. He desired to associate himself with everything that had fallen from the mover of the resolution.

The Report of the Council was then unanimously adopted.

Election of Acting-President.

The CHAIRMAN announced that the Council had recommended that the Right Hon. Ailwyn E. Fellowes be elected Acting-President for the ensuing year, and, in confirmation of that recommendation, he had the extreme pleasure of moving—

"That the Right Hon. Ailwyn Fellowes be elected Acting-President of the Society, to hold office until the next ensuing Annual General Meeting."

Mr. Ailwyn Fellowes' name required no introduction or recommendation to a gathering of agriculturists. His life had been devoted whole-heartedly to the public service, and in that public service his chief and predominant interest had been to promote the welfare of the agricultural industry. A past-President of the Board of Agriculture, a successful exhibitor for many years at the Society's Shows, a generous landlord, and ever a staunch friend to the Society, his election to that important office would be hailed with delight in Norfolk and in the rest of the country as one of advantage to the Society, and, as they hoped he would regard it, a fitting and well-deserved compliment. The proposition would, he felt sure, receive the unanimous approval of that gathering.

The Earl of LEICESTER said it was with the very greatest pleasure that he seconded the resolution proposed by Mr. Cornwallis, "that Mr. Fellowes be appointed as Acting-President to hold office until the next ensuing Annual General Election." (Loud laughter.) His Lordship apologised for his mistake. He should have said Annual General Meeting. He quite agreed with everything that had been said by Mr. Cornwallis. Mr. Fellowes was well known as a successful exhibitor, and encouraged agriculture in every possible way.

The resolution, having been put to the meeting, was carried unanimously.

The Right Hon. AILWYN E. FELLOWES, in reply, assured the meeting that he took it as a very high honour that the members had elected him that afternoon as their Acting-President, and an honour which he was bound to say was very much increased, knowing that he was to act as His Majesty's Deputy, and also that the Show was to be held in his native county. (Hear, hear.) Norfolk was supposed by some people to be the end of the world; that there was nothing between them and the North Pole, and that they grow nothing but turnips and reared partridges. (Laughter.) However that might be, Norfolk was a great agricultural county, and they had always before their minds to help them the names of Coke of Norfolk and Clare Sewell Read. He could assure the Members of the Society, and he hoped thousands of others who would go to Crown Point, including a great many, he hoped, from the Colonies and foreign countries, that they would be able to show them a very fine and lovely showground, and Members of the Society, and visitors also, would receive a very warm and a very hearty welcome, not only from the Lord Lieutenant of Norfolk, but also from the Lord Mayor and citizens of Norwich.

Election of Trustees.

The CHAIRMAN said it was customary for the Trustees to be elected by a show of hands. The names of the present Trustees who were, under By-law 75 recommended by the Council for re-election were printed in Last A on the Agenda paper, and, unless any one present wished to make any observations on the subject, he would ask them to signify in the usual manner whether it was their pleasure that these twelve noblemen and gentlemen should be elected Trustees of the Society to hold office until the next ensuing Annual General Meeting.

The names of the Trustees, who, on a show of hands, were duly elected, are as under:

FR H Prince Christian K G, Cumberland Lodge Windsor
Balford, Duke of K G, Woburn Abbey Bedfordshire
Bowen Jones J St Mary's Court Shrewsbury
Cawdor J A J Stackpole Court Pembrokeshire
Cornwallis F S W Linton Park, Maidstone Kent
Coventry Earl of Cromartie Court Steven Stoke Worcestershire
Devonshire Duke of Chantworth Chesterfield
Gilbey Sir Walter Bart Eleanham Hall Fifeham Essex
Jersey Earl of G O B, G O M G Middleton Park Bicester
Middleton Lord Ridsall House York
Morton Lord Sarsden House, Chipping Norton Oxon
Thorold Sir John H, Bart Old Hall, Syston Grantham

Election of Vice-Presidents

The CHAIRMAN then asked those present to signify, by a show of hands, whether it was their pleasure that the present Vice-Presidents, whose names were printed in Last B, should be re-elected to hold office until the next Annual General Meeting.

The names of the Vice-Presidents elected are —

Adams C R W, Babraham Hall Cambridge
Gosset Sir Richard P Bart Sharnstone Court Lichfield
Crutchley Percy Sunninghill Lodge Ascot Berkshire
Darby Earl of G O V G O B Knowlesley Prescot Lancashire
Dugdale J Marshall, Ldwy, Llanyllin, H O Mont
Fellows Right Hon Adwyn E Homingham Norwich
Feverham Earl of Duncombe Park Helmsley Yorkshire
Greenall, Sir Gilbert Bart Walton Hall Warrington Cheshire
Northbrook Earl of Stratton Micheldever Hampshire
Northumberland Duke of K G, Alnwick Castle Northumberland
Parker Hon Cecil J Eccleston Chester
Yarborough Earl of Brooklands Park Lincolnshire

Thanks to Auditors.

Mr JOHN KENDRICK (Stone) then moved that the best thanks of the Society be tendered to Mr Jonas M Webb Mr Hubert J Greenwood and Mr Newell P Squirey for their services as auditors during the past year, and that they be re-elected to hold office until the next ensuing Annual General Meeting. The position of auditor, as they knew, was an important one, and certainly a very important one to a Society of this description. From the balance-sheet that had been presented he thought they must all agree that it was a very good balance-sheet, and that the auditors had had a very great deal of trouble in going through it. Their best thanks were due to those gentlemen, and he hoped the Members would agree that they should be re-elected.

Mr WILLIAM J BENNISON (London) wished to endorse all that Mr Kendrick had said, and seconded the resolution, which was then carried unanimously.

Elections to the Council.

The CHAIRMAN stated that the necessary steps had been taken to fill the vacancies on the Council in the representation of the districts in Group B, and he had, on behalf of the President, formally to report to the Annual General Meeting the names and addresses of the ordinary Members of the Council who had been elected by the Divisions concerned, in order that the meeting might "take cognisance of their election."

- *Brockhurst, Major-General J. F., CVO, CB Rankenborough, Oakham (Rutland)
 †Brown, Davis, Marham Hall, Downham Market (Norfolk)
 †Cooper, Richard A. M.P., Ashlyns Hall, Berkhamsted (Staffordshire)
 *Frank, Howard, 20 Hanover Square, W. (London)
 *Hamlyn, Ernest A., Oakdale, Ockley (Surrey)
 *Harlech Lord, Brogyntyn, Oswestry (Shropshire)
 *Hazlerigg, Sir Arthur G., Bart., Noseley Hall (Leicestershire)
 *Inne, John Henry, Pomphlett Farm, Plymstock, Plymouth (Devonshire)
 *Mansell, Alfred, College Hill, Shrewsbury (Shropshire)
 *Mathews, Ernest, Little Shardeloes, Amersham (Buckinghamshire)
 *May, William A., 3 Wellington Street, Strand, W.C. (London)
 *Middleton, Christopher, Vane Terrace, Darlington (Durham)
 †Midwood, G. Norris, The Grange, North Road, Congleton (Cheshire)
 *Nocton, William Langham Hall Colchester (Essex)
 †Overman, Henry, Weasenham Swaffham (Norfolk)
 *Pilkington Claude M. S., Wollaton, Nottingham (Nottinghamshire)
 *Prout, W. A., Sawbridgeworth, Herts (London)
 *Rogers, C. Colman, 41 Inge Park, Brampton Bryan (South Wales)
 *Smith, Fred, Woodbridge (Suffolk)
 *Smith Henry Herbert, Bowood Calne (Wiltshire)
 *Stanforth, E. Wilfrid, Kirk Hamerton Hall, York (Yorks, W. Riding)
 *Turner, Arthur P., The Leen, Pembroke (Herefordshire)

Members' Suggestions.

In response to the usual inquiry from the Chair as to whether any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council,

Sir HERBERT CHERMSIDE said he had one or two contingent suggestions to make for the consideration of the Council as regards the mode of future election of ordinary Members of the Council. They were contingent because he might have overlooked the fact that Members were in possession, or were entitled to be in possession, of the information. His suggestion was that when there was a vacancy in an electoral district of the Society for the election of an ordinary Member of Council, a list of the names of the Members of the Society resident in such a district should be furnished to each of them. The second suggestion was that, should the above proposal be approved by the Council, and the By-laws modified accordingly, such a list be now furnished and amended lists on the occasion of the next election. Those suggestions appeared to him to be an obvious and desirable corollary of the changes introduced in the mode of election of Members of Council by the Supplemental Charter of 1905. They appeared to him to be in the general interests of the Society, as regards co-operation and communication between Members resident in a district in other matters than those of the election of Members, and also to be in accordance with the policy of the Council, as indicated to the Members from time to time in the periodical circulars they received, and as again emphasised by the Chairman that day in his appeal regarding the possibilities of extending their personal influence among their neighbours and friends with a view of increasing the number of Members.

The CHAIRMAN assured Sir Herbert Chermiside that his suggestions would receive the careful considerations of the Council.

Thanks to President.

Mr. JOHN EVENS (Burton) begged to move a vote of thanks to the President for his services during the past year. It would be no empty vote of thanks that day, but would, he believed, come straight from the heart of every man in the room. The name of Sir Gilbert Greenall had become a watchword in British agriculture. By his genial courtesy and by his business ability he had endeared himself to every Member of the Society. Further than that, he had won their confidence and esteem. They all knew the dire condition in which the Society found itself some years ago, and he believed that the gentlemen at the meeting would agree with him that it was largely

* Members elected to represent the several Divisions included in Group B

† Members elected under By-laws 83 and 89.

due to the untiring efforts of their Honorary Director, ably assisted by Lady Greenall, that they found themselves in the flourishing condition of the last year or two. He had known presidents of societies who, after having done their best, had found that their services had not been appreciated. He trusted and believed that agriculturists were more grateful, because he was perfectly certain that they did all heartily appreciate with thanks the hard work and the untiring energy that Sir Gilbert had put into the affairs of the Society. He had had the pleasure of working under Sir Gilbert when the Show was at Lincoln, and it was no eight-hours day that he was satisfied with. They had to put in considerably more than that, and, under his genial leadership, they were very glad indeed to do so. He heartily congratulated Sir Gilbert on the success of the Liverpool Show—a success which would be very dear to his heart. He asked the meeting to pass with acclamation a sincere vote of thanks for his services as President during the past year.

MR. ARTHUR C. MOORE (London) desired to endorse all that Mr. Evans had said with reference to their late President, and seconded the resolution of thanks.

The resolution was put to the meeting, and carried by acclamation.

The CHAIRMAN was sure that it would give Mr. McRow the greatest pleasure to convey that expression of feeling of the meeting to their President and Honorary Director.

Thanks to Chairman.

MR. RICHARD STRATTON (Newport) said it gave him very great pleasure to propose a vote of thanks to Mr. Cornwallis for his excellent services in the Chair that day. He had proved himself to be an able Chairman. He reminded them that Mr. Cornwallis' services to the Society had not been confined merely to his services that day (hear, hear)—but that as President of the Society he had played a very great part in the reinvigoration of that great Society. He (Mr. Stratton) was very proud, as an old Member of the Council of thirty years' standing, to congratulate the Society upon the improved, and he might now say splendid, position which it had entirely recovered, if it was not stronger than it had ever been. It was also a great satisfaction to him to have acted on the Special Committee of 1905 under Mr. Cornwallis in that memorable year of his presidency, when he (Mr. Stratton) had the honour to move the adoption of the report, which, he thought, had formed the basis of the new life and success which the Society had attained. He was very pleased to be able to propose a vote of thanks, and he was sure there was no Member of Council to whom they were more indebted than to Mr. Cornwallis.

MR. COOPER CORBIDGE (London) had very much pleasure in seconding the resolution. Mr. Cornwallis was an excellent Chairman, and he wished he could have the same kind of Chairman at all the meetings he attended.

The motion was unanimously carried.

MR. CORNWALLIS thanked the meeting for the very kind vote they had passed on the proposition of an old friend. He could assure them that he did not deserve one half, or in the smallest degree, what Mr. Stratton was kind enough to say on his behalf, but he was second to none in rejoicing to think that the Society had continued to make such satisfactory progress as it had done under the Presidency and Honorary Directorship of Sir Gilbert Greenall. He was sure that had Sir Gilbert been present he would have wished to express his thanks and gratitude to Mr. McRow and his staff for the loyal and experienced assistance they had given to the Council year in and year out. They were fortunate indeed to have such a staff. He only hoped that he efforts of the Honorary Director, the Council and Staff would always give satisfaction to the Members, and would continue to promote the progress of that great national institution.

The meeting then terminated.

LIVERPOOL SHOW,

JUNE 21 TO 25, 1910.

Officials of the Show.

PRESIDENT AND HONORARY DIRECTOR :

Sir GILBERT GREENALL, Bart., Walton Hall, Warrington.

Stewards of Live Stock.

Horses

CYRIL E GREENALL, The Manor, Carlton Scroop, Grantham.

JOHN ROWELL, Bury, Huntingdon

Cattle

JOSEPH HARRIS, Blackenbrough Tower, Carlisle.

Sheep and Pigs.

C. W TINDALL, Wainfleet, Lincolnshire.

Steward of Dairying and Poultry.

ERNEST MATHEWS, Little Shardsloes, Amersham, Bucks.

Steward of Forage.

R B NEILSON, Palatine Club, Liverpool

Steward of Veterinary Examination.

CYRIL E GREENALL, The Manor, Carlton Scroop, Grantham.

Stewards of Implements.

F S W CORNWALLIS, Linton Park, Maidstone.

The Hon J E CROSS, High Legh, Knutsford

CLAUDE M S. PILKINGTON, Wollaton, Nottingham

Stewards of Refreshments.

HOWARD FRANK, Rusthall, Wimbledon Common, Surrey

WILLIAM HARRISON, Hall House, Leigh, Lancs

Steward of Education Exhibition.

J. BOWEN-JONES, St. Mary's Court, Shrewsbury.

Steward of Horticultural Exhibition.

The Hon J R DE C BOSCAWEN, Tregye, Penzance, Cornwall

Stewards of Forestry.

GEORGE MARSHALL, Broadwater, Godalming

C COLTMAN ROGERS, Stanage Park, Bampton Bryan

Stewards of Finance.

CHARLES R. W ADEANE, Babraham Hall, Cambridge.

THOMAS L. AVELING, Boley Hill House, Rochester.

RICHARDSON CARR, Estate Office, Ting Park, Heris

Sir RICHARD COOPER, Bl, Shenstone Court, Lichfield

Surveyor.

J E NAYLOR, F.R.I.B.A., Smith's Bank Chambers, Derby.

Secretary.

THOMAS McROW, 16 Bedford Square, London, W.C.

JUDGES OF IMPLEMENTS.

Agricultural Motor Trials.

W WORBY BEAUMONT, M Inst C E, Outer Temple, 222 Strand, London, W C

R J BAYNTON HIPPISELY, Ston-Baston Park, near Bath.

Miscellaneous Implements entered for Silver Medals.

WILLIAM CROSS, M Inst.C E, Spreakfield Cottage, Friesham, Farnham

CLAUDE W THOMPSON, Red House, Kewick, York

JUDGES OF LIVE STOCK, &c.

HORSES.

Shires. *(Classes 1-9.*

F. W. GRIFFIN, Boro' Fen, Peterborough

W. HOWKINS, Hillmorton Grounds, Barby Road, Rugby.

Clydesdales. *—(Classes 10-17.*

RICHARD DUNN, Udston, Hamilton
ROBERT MOALISTER, Mid-Ascoq, Bute.

Suffolks. *(Classes 18-22.*

EDWIN H. PRESTON, Wood Farm, Worlingworth, Framlingham.

Draught Goldings *(Class 23.*

RICHARD DUNN, Udston, Hamilton.
F. W. GRIFFIN, Boro' Fen, Peterborough.

Draught Horses in Gears. —

(Classes 23A and B, 24 and 25.

JOHN T. C. EADIE, The Rock, Newton Solney, Burton-on-Trent.

Hunters. *(Classes 26-42.*

The Earl of ORKNEY, The Tythe House, Stewkley, near Leighton Buzzard.

Captain C. FETHERSTONHAUGH, Bracklyn, Killucan, Ireland.

Polo Ponies. *(Classes 43-47.*

G. NORRIS MIDWOOD, The Grange, North Rade, Compton

Rev. D. B. MONTEFIORE, Bradwell, Lechlade.

Polo Ponies *(Classes 48 and 49.*

A. T. NEILSON, Pulhine Club, Liverpool.

Colonel W. LEE PILKINGTON, Norley Hall, Frodsham.

Cleveland Bays and Coach Horses. —
(Classes 50 and 51.

Sir ALFRED E. PHASE, Bt., Pinchinthorpe House, Gainsborough.

Hackneys. — *(Classes 52-60 ; Hackney Ponies. (Classes 61-61 ; Harness Horses. —(Classes 65-76 ; and Turnouts. —(Classes 81 and 82.*

ARTHUR E. EVANS, Bronwylla, Wrexham.

T. D. REED, The Grange, Beccford, Driffield.

Shetland Ponies. —(Classes 77 and 78.

W. PANKIN-MOORE, Whitehall, Mealsgate, Cumberland.

Welsh Ponies. —(Classes 79 and 80.

JOHN R. BACHE, Stud Farm, Knighton, Radnorshire.

CATTLE.

Shorthorns. —(Classes 83-95.

WALTER CROSLAND, Estate Office, Buscot Park, Faringdon.

JAMES T. HOBBS, The Manor House, Marsey Hampton, Fairford.

ROBERT HORNBY, Hovingham, York.

Dairy Shorthorns. —(Classes 96-99.

JOSEPH C. ROBINSON, Iford, Lewes.

RICHARD VERNON, Estate Office, Hambleden, Henley-on-Thames

Lincolnshire Red Shorthorns. —

(Classes 101-107.

BEN ROWLAND, Ivy House, Wainfleet, Lincs.

Herefords. —(Classes 109-116.

G. H. GREEN, Wignore Grange, Leintwardine.

J. W. MILLYARD, Littlebridge, Bromyard.

Devons. —(Classes 117-123.

SAMUEL KIDNER, Bickley, Milverton, Somerset.

South Devons. —(Classes 125-129.

W. J. CROSSING, Woodford, Plympton, Devon.

Longhorns —(Classes 131-134.

HENRY HOUGHTON, Narley House, Oshrostone, Nuneaton.

Sussex. —(Classes 136-140.

W. MANSTE, Estate Office, Shillinglee Park, Petworth.

Welsh. —(Classes 141-146.

O. PARRY JONES, Plas Iechylched, Brynwgwan, Anglesey.

Red Polls. (Classes 147-151.

J. B. CHEVALIER, Aspell Hall, Debenham, Suffolk.

Aberdeen-Angus. —(Classes 153-159.

Rev. C. BOLDEN, Preston Bissett, Buckingham.

ROBERT BRUCE, Leinster House, Dublin.

Galloways. —(Classes 160-163 ; Highland. *(Classes 164 and 165.*

ANDREW MONTGOMERY, Nether Hall, Castle Douglas.

Ayrshires. —(Classes 166-168.

JOHN MURRAY, Carston, Ochiltree.

Jerseys. —(Classes 170-176.

Hon. ALEX. E. PARKER, Norton Curdieu, Warwick.

A. F. NEEL, Beau Desert, Trinity, Jersey.

Guernseys.—Classes 178-182.
J. D. TOOGOOD PARSONS, Manor View,
Rusthall, Tunbridge Wells.

Kerries.—Classes 184-187.
H. D. BETTERIDGE, Drayton, Wood-
stock Road, Summertown, Oxford.

Dexters.—Classes 189-192.
F. N. WEBB, Babraham, Cambridge.

Dairy Cattle.—Classes 194-198.
JOSEPH C. ROBINSON, Iford, Lewes.
RICHARD VERNON, Estate Office,
Hambleton, Henley-on-Thames.

SHEEP.

Oxford Downs.—Classes 200-204.
SAMUEL TREADWELL, Windmill Hill
Farm, Waddesdon, Aylesbury.

Shropshires.—Classes 205-212.
A. S. BERRY, Shenstone Hall, Lich-
field.
ROBERT F. H. WHITE, Aghavoe
Grange, Ballacolla, Abbeylisc.

Southdowns.—Classes 213-218.
HERBERT SENIOR, Tarrant Rushton,
Blandford, Dorset.
W. TOOP, Church Farm, Alding-
bourne, Chichester.

Hampshire Downs.—Classes 219-224.
J. H. DIBBEN, Flamston House,
Bishopstone, Salisbury.
JOHN PAIN, Borough, Micheldever,
Hants.

Suffolks.—Classes 225-230.
J. C. DAWSON, Nacton, near Ipswich.

Dorset Horn.—Classes 231-234.
JOHN KIDNER, Dodhill House,
Taunton.

Ryelands.—Classes 235-237.
J. W. MILLYARD, Littlebridge, Brom-
yard.

Kerry Hill (Wales).—Classes 238-241.
RICHARD MORGAN, Snowfield, Kerry,
Mont.

Lincolns.—Classes 242-248.
JOSEPH BROCKLEBANK, Carlton-le-
Moorland, Newark.
GEORGE MARRIS, Kirmington, Brock-
lesby, Lincs.

Leicesters.—Classes 249-252.
JOHN DOBSON, Green Dragon Farm,
Burton, Westmorland.

Border Leicesters.—Classes 253-255.
W. B. DICKINSON, Longcroft, Oxtou
Berwickshire.

Wensleydales.—Classes 256-260.
J. H. CLOSE, Carperby N.O., York-
shire.
HAROLD DEWHURST, Aireville,
Skipton.

Lonks.—Classes 261-261.
WILLIAM S. AIREY, Whalley, near
Blackburn.

Derbyshire Gritston.—Classes 265-267.
S. LUND, Laycock, near Keighley.

Kent or Romney Marsh.—
Classes 268-273.
F. AUSTEN BENTED, The Lawn,
Sittingbourne, Kent.
FRANCIS DE B. COLLARD, Minster
Abbey, Ramsgate.

Cotswolds.—Classes 274-277.
GEORGE FREEMAN, Sherborne, North-
leach, R.S.O., Glou.

Devon Long Wools.—Classes 278-280.
C. L. HANCOCK, The Manor House,
Cothelstone, Bishop's Lydeard.

South Devons.—Classes 281-285.
JOHN GRIGG, Portlooe, Looe, Corn
wall.

Dartmoors.—Classes 286-288.
ROBERT J. TOOP, Place Barton,
Yelverton.

Exmoors.—Classes 289-291.
THOMAS CRICK, Great Ash, Winsford.

Cheviots.—Classes 292-294.
THOMAS ELLIOT, Attonburn, Kelso.

Hardwicks.—Classes 295-297.
E. SAWREY, Grassguards, Ulphn,
Broughton-in-Furness.

Welsh Mountain.—Classes 298-300.
W. E. WILLIAMS, The Cottage,
Carrog, Corwen.

Black-faced Mountain.—
Classes 301-303.

J. MOFFAT, Gateside, Sanquhar.

PIGS.

Large Whites.—Classes 304-309.
A. F. NICHOL, Bradford, Belford,
Northumberland.

Middle Whites.—Classes 310-315.
WILLIAM BRATTIE, Hardwick
Grange, Clumber Park, Worksop.

Tamworths.—Classes 316-321.
D. W. PHILLIP, The Redlands, Whit-
acre, Birmingham.

Berkshires.—Classes 322-327.
N. BENJAMIN, Motcombe, Shaftes-
bury.

Large Blacks.—Classes 328-333.

JOHN GODDARD, Sene, Tinstall,
R.S.O., Suffolk

Lincolnshire Curly-coated. —

Classes 331-339.

MATTHEW HOLMES, Vicarage Road,
Heckington S.O., Lines.

POULTRY.

Classes 340-457.

W. W. BROOMHEAD, Broadview,
Hivings Hill, Chesham, Bucks.

WILLIAM BYGOTT, Rychill House,
Wing, Oakham, Rutland.

GEORGE FAULKNER, Rowton, Chester.
JOHN WHARFON, Honeycott, Hawes,
Yorkshire

JOHN WILKINSON, Burrow House,
Scotforth, Lancaster.

PRODUCE.

Butter.—Classes 458-464.

Professor R. J. DRUMMOND, The Dairy
School, Kilnarnock.

Cheese.—Classes 465-478.

JOHN BINSON, The Kettering Dairy,
Dalketh Place, Kettering.

ROBERT THRELFALL, 5 St. Chad's
Terrace, Promenade, Blackpool.

THOMAS WELSHBY, 9 Wellington Road,
Bhyt.

Cider and Perry.—Classes 479-486.

B. T. P. BARKER, M.A., Long Ashton,
near Bristol.

JAMES SLATTER, Paxford, Campden,
S.O., Glou.

Wool.—Classes 487-497.

J. T. HADDON, 19, Dale Street, Brad-
ford.

M. B. HOLLINGS, Calverley, near
Leeds.

Hives and Honey.—Classes 498-522.

C. L. M. GILES, Dilkusha, Wallington,
Surrey.

A. G. PUGH, Queen's Road, Beoston,
Notts.

W. F. REID, Field Side, Addlestone,
Surrey.

F. H. TAYLOR, County Bank, Chorley,
Lancs.

COMPETITIONS.

Jumping.

ALFRED ASHTON, Forest Hill, Tar-
porley.

ARTHUR E. EVANS, Bronwyfya,
Wrexham.

Horse-shoeing.

HENRY SUMNER, M.R.C.V.S., Chapel
Court, 15, Vauxhall Road, Liverpool.

W. JONES ANSTEE, A.F.C.L., Northen-
den, Jackson Avenue, Roundhay,
Leeds.

Butter-making.

JOHN GILCHRIST, 81, Hope Street,
Glasgow.

FARMS.

C. EDWARD E. COOKE, Rygrave House,
near Baldock, Herts.

JOHN MYATT, Lynn House, near
Lichfield.

PLANTATIONS AND NURSERIES.

SAMUEL MARGERISON, Calverley,
Leeds.

THOMAS ROBERTS, Easebourne,
Mildhurst.

FORESTRY.

ROBERT ANDERSON, Cirencester.

WILLIAM AGATE, Horsham, Sussex.

HORTICULTURE.

W. CRUMP, V.M.H., Madresfield
Court Gardens, Milvern.

JAMES DOUGLAS, V.M.H., Edenside,
Great Bookham, Surrey.

JAMES HUDSON, V.M.H., Gunners-
bury House Gardens, Acton,
Middlesex.

CHIEF VETERINARY OFFICER.

JOHN MALCOLM, F.R.C.V.S., Holiday
Street Wharf, Birmingham.

VETERINARY INSPECTORS.

T. EATON JONES, M.R.C.V.S., Veteri-
nary Department, Municipal Build-
ings, Dale Street, Liverpool.

Professor J. MACQUEEN, F.R.C.V.S.,
Royal Veterinary College, Camden
Town, London, N.W.

JOSEPH H. CARTER, F.R.C.V.S.,
Church Street, Burnley.

GEORGE M. DAVEY, M.R.C.V.S., 71
and 73 Leeds Street, Liverpool.

F. L. GOOCH, F.R.C.V.S., St. Martin's,
Stamford.

STAFFORD JACKSON, M.R.C.V.S., 70
Low Hill, Liverpool.

HENRY SUMNER, M.R.C.V.S., Chapel
Court, 15 Vauxhall Road, Liverpool.

WILLIAM WOODS, F.R.C.V.S., 28
Standishgate, Wigan.

ASSISTANT VETERINARY OFFICER.

WILLIAM TRIGGER, F.R.C.V.S., New-
castle, Staffs.

AWARDS OF PRIZES AT LIVERPOOL, 1910.

ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize.
V., Fifth Prize. R. N., Reserve Number. H. C., Highly Commended.

N.B.—The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Sheep, and Pigs was "bred by Exhibitor."

HORSES.

Shires.

No in
Cata-
logue.

Class 1.—Shire Stallions, foaled in 1909.¹

[6 entries, none absent.]

- 1 I. (£20).—SIR WALPOLE GREENWELL, BT, Marden Park, Woldingham, Surrey, for Marden Forest King, bay; s. Lockinge Forest King 18807, d. Knottingley Fuchsia 39383 by Knottingley Regent 18180
- 2 II. (£10).—LORD MIDDLETON, Birdsall, York, for Birdsall Forest King, bay, bred by W. Webster, The Hermitage, Stockton-on-Forest, York; s. Redlynch Forest King 23828, d. Folville Petrel 47986 by Benedict 17761.
- 5 III. (£5).—F. E. MUNTZ, Umberslade, Hockley Heath, for Umberslade Menestrel, bay, bred by Wm Horrell The Sycamores, Thorney, Peterborough; s. Holker Menestrel 2nd 22451, d. Eastern Beauty 50942 by Eastern Freemason 20452
- 6 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Benefactor.

Class 2.—Shire Stallions, foaled in 1908. [12 entries, 5 absent.]

- 14 I. (£20, R. N. for Champion,² & R. N. for Cup.³)—LORD ROTHSCHILD, Tring Park, Herts, for Halstead Blue Blood 27397, bay, bred by John Bradley, Halstead, Tilton, Leicesters; s. Lockinge Forest King 18807, d. Halstead Duchess 3rd 12121 by Menestrel 14180.
- 16 II. (£10).—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Eaton Nonsuch 27301, brown; s. Lynn Champion 25622, d. The Nun 21019 by Fleet Nona 4304.
- 18 III. (£5).—W. & H. WHITLEY, Primley Farm, Paignton, for Saltfleet Dray King 27742, bay, bred by T. H. B. Freshney, South Somercotes, Leicesters; s. Tutton Dray King 23777, d. Clapton Bonny 47487 by Heckington Thumper 2nd 16174
- 17 IV. (£4).—E. & J. WHINNERY, Warton, Camforth, for Warton Draughtsman 27845, bay, bred by James Bullock, Draycott-le-Clay, Sudbury, Derby; s. Tutton Friar 21953, d. Draycott Speculation 50780 by Ercall Wynn 11620.
- 9 R. N. & H. C.—A. GRANDAGE, Stud Farm, Bramhope, Leeds, for Bramhope Ildrim.

Class 3.—Shire Stallions, foaled in 1907.¹ [12 entries, 2 absent.]

- 20 I. (£20, Champion,² & Cup.³)—H. & R. AINSWORTH, Burscough, Ormskirk, for Tutton Herald 26763, black, bred by the late Earl Eglinton of Tutton, Tutton Park, Knutsford; s. Tutton Friar 21953, d. Tutton Aurora 13630 by Buxton Harold 18576.
- 28 II. (£10).—F. FARNSWORTH, Tooley Park, Hineley, for Wakeful Boy 26797, bay, bred by the late Wm Bouch, Ashorne Warwick; s. Bowden Royal Duke 18661, d. Sleeping Beauty 33845 by Watnall Chancellor 16153.
- 20 III. (£5).—J. ELLIS POTTER, Moor Hall, Aughton, Ormskirk, for Nately Dray King 27613, bay, bred by S. Dockray, Cabay, Gillingham; s. Ewston Tom 22004, d. Jewel 54202 by Drayman 23rd 19551.

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Stallion in Classes 1-3.

³ The Royal Lancashire Society's "Dorby" Challenge Cup, value £50, for the best Stallion in Classes 1-3.

Award of Live Stock Prizes at Liverpool, 1910. xlvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 30 IV. (24.) LORD ROTHSCCHILD, Trump Park, Hert's., for **Babingley Good Luck** 25882, bay, bred by E. W. Bell, Babingley, Kings Lynn; s. **Onwiche Island** 17220, d. **Babingley Violet** 10175 by **Pennywater** 18017.

- 27 R. N. & H. C. A GRANDAGE Stud Farm, Bramhope, Leeds, for **Wedgewood 2nd**.

Class 4. Shire Fillies, foaled in 1909. [12 entries, 2 absent.]

- 31 I. (20.1) JOHN BRADLEY, Halstead, Tilton, Leicester, for **Halstead Royal Duchess**, bay; s. **Lockinge Forest King** 18867, d. **Halstead Duchess 3rd** 12121 by **Menestrel** 14180.
 38 II. (210.4) LORD ROTHSCCHILD, Trump Park, Hert's., for **Lorna Doone**, brown, bred by Thomas Green, The Bank, Pool Quay, Welshpool; s. **Childwick Champion** 22315, d. **Bank Roselet** 52901 by **Bank Nil Desperandum** 21098.
 42 III. (25.1) J. G. WILLIAMS, Pendley Manor, Tring, for **Bradgate Forest Queen**, bay, bred by the Exors. of the late T. Appleby, Nixon, Stafford; s. **Lockinge Forest King** 18867, d. **Nixon Dora** 23090 by **Harold** 3703.
 35 IV. (24.) B. N. EVERHARD, Bardon Hall, Leicester, for **Bardon Sylvia**, bay, bred by John Cookson, Boro' Fields, Walton-on-Trent; s. **Lockinge Forest King** 18867, d. **Didbury Venus** 47713 by **Kirkwood Victor** 18295.
 30 R. N. & H. C. THE DUKE OF SUTHERLAND, K.G., Lilleshall, Newport, Salop, for **Lilleshall Mavis**.

Class 5. —Shire Fillies, foaled in 1908. [10 entries, 3 absent.]

- 47 I. (220, R. N. for Champion, & R. N. for Cup.) —SIR WALPOLE (GREENWELL, BT., Marden Park, Woldingham, for **Dunsmore Chessie** 80183, chestnut, bred by J. and M. Hewitt, Chuddeley Farm, Monks Kirby; s. **Dunsmore Raider** 21367, d. **Jewel's Eve** 30317 by **Puckrup Prince Harold** 18234.
 48 II. (210.) J. ELLIS POTTER, Moor Hall, Aughton, Ormskirk, for **Champion's Choice** 50769 bay, bred by Edward Green, The Moors, Welshpool; s. **Childwick Champion** 22315, d. **Willston Countess** 40720 by **Warton Dravum** 19273.
 49 III. (25.) J. ELLIS POTTER, for **Christmas Rose** 59812 bay, bred by F. Farnsworth, Tooley Park, Huncley; s. **Birdsall Menestrel** 10337, d. **Brookhall Primrose** 47333 by **Lockinge Forest King** 18867.
 51 R. N. & H. C. THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for **Coronia**.

Class 6. Shire Fillies, foaled in 1907. [6 entries, 2 absent.]

- 57 I. (220, Champion, & Cup.) J. G. WILLIAMS, Pendley Manor, Tring, for **Bardon Forest Princess** 50008, bay, bred by W. Groscock, Desford, Leicester; s. **Lockinge Forest King** 18867, d. **Princess** 49083 by **Fauld Charming** 14623.
 54 II. (210.) B. N. EVERHARD, Bardon Hall, Leicester, for **Medbourne Duchess** 57736, dark bay, bred by W. B. Burrows, Medbourne, Market Harborough; s. **Medbourne Forest King 2nd** 21135, d. **Beauty** by **Arbitrator 3rd** 16102.
 56 III. (25.) THE DUKE OF SUTHERLAND, K.G., Lilleshall, Newport, Salop, for **Lilleshall Countess** 57510 bay; s. **Dunsmore Jameson** 17972, d. **Lilleshall Bloss** Rose 43512 by **Markenton Royal Harold** 15255.

Class 7. Shire Mares, with Foals at foot. [15 entries, 4 absent.]

- 70 I. (220.) THE DUKE OF SUTHERLAND, K.G., Lilleshall, Newport, Salop, for **Lilleshall Moss Rose** 47612, bay foaled in 1901; s. **Markenton Royal Harold** 15255, d. **Fancy** 25002 by **Scarfoll Hero** 14857. [Foal by **Birdsall Menestrel** 19337.]
 72 II. (210.) W. & H. WHITLEY, Primley Farm, Epsington, for **Mollington Movement** 48793, bay, foaled in 1901, bred by G. E. Bruce Fry, Mollington, Banbury; s. **Lockinge Forest King** 18867, d. **Cathurys Mahnaison** 10580 by **Ornton Magnus** (Guria 9105. [Foal by **Tatton Day King** 28777.])
 59 III. (25.) JOHN BRADLEY, Halstead, Tilton, Leicester, for **Halstead Duchess 3rd** 12121, brown, foaled in 1902; s. **Menestrel** 14180, d. **Halstead Lady Harold** 28812 by **Markenton Royal Harold** 15226. [Foal by **Lockinge Forest King** 18867.]
 64 IV. (24.) SIR WALPOLE (GREENWELL, BT., Marden Park, Woldingham, for **Marden Peach** 54007, bay, foaled in 1900; s. **Lockinge Forest King** 18867, d. **Marden Pride** 48098 by **Codnor Harold** 17200. [Foal by **Norbury Menestrel** 23513.]
 71 R. N. & H. C. W. & H. WHITLEY, for **Ashleigh Royal Duchess**.

Class 8. —Shire Colt Foals, the produce of Mares entered in Class 7.

[6 entries, 2 absent.]

- 76 I. (210.) LORD MIDDLTON, Birdwill House, York, for black, foaled March 4; s. **Dunsmore Jameson 2nd** 20158, d. **Star** 24819 by **Sturton Emperor** 12487. [Exhibited with No. 65 in Class 7.]
 78 II. (25.) MRS. E. M. M. SAUTER, Premion Hall, Aylesford, Kent, for bay, foaled April 7; s. **Barrow King** 23082, d. **Potford Blossom** 53016 by **Rokohy Plutus** 18303. [Exhibited with No. 68 in Class 7.]

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Mare or Filly in Classes 4-7.

³ The Royal Lancashire Society's "Greenall" Challenge Cup, value £50, for the best Mare or Filly in Classes 4-7.

xlviil Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 74 III. (£3.)—JOHN BRADLEY, Halstead, Tilton, Leicester, bay, foaled April 8; s. Lockinge Forest King 18867, d. Halstead Duchess 3rd 42121 by Menestrel 14180. [Exhibited with No 59 in Class 7.]

- 79 R. N. & H. C.—W. & IL. WHITLEY, Primley Farm, Paignton.

Class 9.—*Shire Filly Foals, the produce of Mares entered in Class 7.*

[7 entries, 2 absent.]

- 83 I. (£10.)—SIR WALPOLE GREENWELL, Bt., Marden Park, Woldingham, for bay, foaled March 2; s. Norbury Monestrel 23543, d. Marden Peach 51007 by Lockinge Forest King 18867. [Exhibited with No 61 in Class 7.]
- 80 II. (£5.)—H. H. SMITH CARINGTON, Ashby Folville, Melton Mowbray, for Folville Viscountess, brown, foaled April 13; s. Ivy Victor Chief 25310, d. Deaford Forest Queen 47708 by Lockinge Forest King 18867. [Exhibited with No. 60 in Class 7.]
- 81 III. (£3.)—THE DUKE OF DEVONSHIRE, Chatsworth, Chesterfield, for bay, foaled April 20; s. Halstead Royal Duke 25255, d. Buttercup 53371 by Holker Monestrel 2nd 22451. [Exhibited with No. 62 in Class 7.]
- 85 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton

Clydesdales.¹

Class 10.—*Clydesdale Stallions, foaled in 1909.* [8 entries, 1 absent.]

- 91 I. (£20.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for black, bred by George Argo, Petty, Fyvie; s. Everlasting 11331, d. Dull of Petty 17307 by Prince of Carlung 7148.
- 93 II. (£10.)—A. & W. MONTGOMERY, for bay, bred by James Durno, Jackstown, Rothenorman; s. Everlasting 11331, d. May Blossom 16058 by Prince Thomas 10262.
- 88 III. (£5.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for Montrave Ivanhoe, bay, bred by Sir John Gilmour, Bt., Montrave, Leven; s. Baron of Buchlyvie 11263, d. Imperial Beauty 21348 by Everlasting 11331.
- 94 R. N. & H. C.—GEORGE WATSON, Lowfield House, Wigton, for General Miller.

Class 11.—*Clydesdale Stallions, foaled in 1908.* [4 entries, 1 absent.]

- 98 I. (£20, & Champion.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for Royal Guest 15363, brown, bred by G. A. Anderson, Conistyle, Huntly; s. Everlasting 11331, d. Betty of Comistry 16478 by Prince Thomas 10262.
- 97 II. (£10.)—A. & W. MONTGOMERY, for Baron Chappaman 15130, brown, bred by H. W. B. Crawford, Chappaman, Castle Douglas; s. Baron's Pride 8122, d. Daisy of Chappaman 14989 by Prince of Carruchan 8151.
- 95 III. (£5.)—HENRY C. HOWARD, Greystoke Castle, Cumberland, for Baron Greystoke; s. Baron Nelson 13342, d. Ermine 17777 by Erskine 2nd of Drumlanrig 9743.

Class 12.—*Clydesdale Stallions, foaled in 1907.* [1 entries, 1 absent.]

- 103 I. (£20, & R. N. for Champion.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for The Bruce 14376, brown, bred by John Bauchop, Milburn, Alexandria; s. Revelant, 11876, d. Jenny Favourite 19100 by Royal Favourite 10630.
- 101 II. (£10.)—A. & W. MONTGOMERY, for Glenavon 15337, bay, bred by G. W. Finlayson, Kirkton, Culross; s. Baron of Boquhan 12840, d. Darling of Kukton 15036 by Fortune Still 9752.
- 100 III. (£5.)—JOSEPH HAYTON, Sandcastle Stud Farm, Dalton-in-Furness, for Sir Hector of Westfield 15118, bay, bred by Christopher Topping, Westfield House, Burgh-by-Sands, Carlisle; s. Hinwatha 10067, d. Lothian Lass of Seaville Cote 17158 by Lord Lothian 5998.

Class 13.—*Clydesdale Fillies, foaled in 1909.* [7 entries, 2 absent.]

- 103 I. (£20, & Champion.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for Dunure Myrene, bay, bred by Robert Walde, Muirclough, Lander; s. Baron of Buchlyvie 11263, d. Muirclough Belle 18447 by Montrave Mac 9958.
- 109 II. (£10.)—W. S. ROBERTSON, Crossrigg, Penrith, for Rose of Crossrigg, dark brown; s. Baron of Burgie 13345, d. Rose of Ash Hill 24231 by Ardlethen 12146.
- 107 III. (£5.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for Boquhan Lady Mary 2nd, black; s. Oynna 13118, d. Boquhan Lady Mary 23987 by Hinwatha 10067.
- 104 R. N. & H. C.—J. ERNEST KERR, Harviestoun Castle, Dollar, for Harviestoun Ada.

Class 14.—*Clydesdale Fillies, foaled in 1908.* [9 entries, 1 absent.]

- 113 I. (£20.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Harviestoun Rose, bay; s. Marmon 11420, d. Rosedew 16783 by Baron's Pride 8122.

¹ £50 towards these Prizes were given by the Clydesdale Horse Society.

² Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 10-12.

³ Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 13-16.

Award of Live Stock Prizes at Liverpool, 1910. xlix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

117 II. (£10.) STEPHEN MITCHELL, Boquhan, Kippen Station, for Sweet Melody, brown bred by James Dunlop, Oldhills, Fenwick; s. Hiawatha 10067, d. Harmony 21276 by Baron of Buchlyvie 11263

118 III. (£5.) JAMES PICKEN, Torrs Farm, Kirkcudbright, for Lady Alston, bay, bred by John McMillan, Barmiel, Kirkcudbright; s. Revelantia 11876, d. Labadora 17863 by Labon 10791.

119 R. N. & H. O. THE DUKK OF BUCKLEUCH AND QUEENSBERRY, K.G., K.T., Drumlinrig Castle, Thornhill, Dumfriesshire, for Marjory of Drumlanrig

Class 15. *Clydesdale Fillies, foaled in 1907.* [7 entries, 2 absent.]

123 I. (£20. & R. N. for Champion.) STEPHEN MITCHELL, Boquhan, Kippen Station, for Thelma 2nd, brown, bred by J. P. Sleigh St John's Wells, Kyvie; s. Baron's Pride 9122, d. Thelma 19208 by Mams of Airds 10379

122 II. (£10.) STEPHEN MITCHELL, for Boquhan Beatrice, brown, s. Hiawatha 10067, d. Beatrice 20050 by Baron's Pride 9122.

120 III. (£5.) J. ERNEST KERR, Harviestoun Castle, Dollar, for Cicely, bay, bred by J. Wright & Sons, Silloth; s. Baron's Pride 9122, d. Seabreeze 15002 by Lord Lothian 5908

124 R. N. & H. O. W. N. PILKINGTON, Rainford Hall, St Helens, for Young Justice.

Class 16. *Clydesdale Mares, with Foals at foot.* [10 entries, 1 absent.]

132 I. (£20.) STEPHEN MITCHELL, Boquhan, Kippen Station, for Blossom of Newhouse 11611, brown, foaled 1901, bred by W. Muir, Newhouse, Wilkinston; s. Baron's Pride 9122, d. Maypole 1st of Newhouse 18077 by Prince Roman-Hoods 8114 [Foal by Apukwu 11507.]

129 II. (£10.) HENRY B. MARSHALL, Rachan Broughton, Peeblesshire, for Sarcelle, brown, foaled 1906 bred by G. A. Anderson, Comisty, Huntly; s. Everlasting 11331, d. Betty of Comisty 16473 by Prince Thomas 10262 [Foal by Baron's Pride 9122.]

128 III. (£5.) J. ERNEST KERR, Harviestoun Castle, Dollar, for Marilla, black, foaled 1906, bred by J. J. Moubrey, Nuenoor, Rumbler Bridge; s. Baron's Pride 9122, d. Mona 2nd 11731 by Prince of Cathcart 8915 [Foal by Scotland Yet 14839]

127 R. N. & H. O. WILLIAM DUNLOP, Dunure Mains, Ayr, for Dunure Ideal.

Class 17. *Clydesdale Foals, the produce of Mares in Class 16.*

[9 entries, none absent.]

137 I. (£10.) WILLIAM DUNLOP, Dunure Mains, Ayr, for black colt, foaled May 10; s. Baron of Buchlyvie 11263, d. Dunure Ideal 21263 by Auchensflower. [Exhibited with No. 127 in Class 16.]

138 II. (£5.) J. ERNEST KERR, Harviestoun Castle, Dollar, for brown colt, foaled May 6; s. Scotland Yet 14839, d. Marilla by Baron's Pride 9122. [Exhibited with No. 128 in Class 16.]

139 III. (£3.) HENRY B. MARSHALL, Rachan, Broughton, for black colt, foaled April 20; s. Baron's Pride 9122, d. Sarcelle by Everlasting 11331. [Exhibited with No. 126 in Class 16.]

136 R. N. & H. O. R. BRAYDON, The Dene, Seaham Harbour.

Suffolks.³

Class 18. *Suffolk Stallions, foaled in 1908.* [6 entries, none absent.]

148 I. (£20.) MR OUTHERBT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Volunteer 3628; s. Bentley War Cry 3028, d. Golden Drop 5010 by Golden Grain 2476.

149 II. (£10.) A. CHARLES SMITH, Ashmoor, Cammow Ash, Wickham Market, for Ashmoor Hyperion 3630, bred by W. G. Garry, Parham, Wickham Market; s. Saturn 2053, d. Daisy 4368 by Sutton Sweet 2686.

146 III. (£5.) KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Sweetest 3670; s. Sudbourne Arabi 3267, d. Sudbourne Sweet 3570 by Viceroi 194.

144 R. N. & H. O. ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Majestic.

Class 19. *Suffolk Stallions, foaled in 1907.* [4 entries.]

153 I. (£20.) MR OUTHERBT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Ladde 3697; s. Bawdsey Harvester 3070, d. Woolpit Lass 4109 by Worcester 2279.

152 II. (£10.) THE MARQUIS OF GRANHAM, Easton Park, Wickham Market, for Easton Trainbearer 3502, bred by H. G. Carley, Saxtead, Framlingham; s. Dennington Cupbearer 3086, d. Bell 3658 by Wedgewood 2nd 2045.

154 III. (£5.) MR OUTHERBT QUILTER, BT., for Bawdsey Romany 3590, bred by the Kerrison Reformatory School, Thorndon, Eye; s. Dennington Cupbearer 3086, d. Gyp 5781 by Border Minstrel 2267.

151 R. N. & H. O. —KENNETH M. CLARK, for Sudbourne Counter.

¹ Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Class 15 16.

² £20 towards these Prizes were given by the Suffolk Horse Society.

1 *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 20.—Suffolk Fillies, foaled in 1908. [5 entries, none absent.]

- 156 I. (£20.)—KENNETH M. OLARK, Sudbourne Hall, Orford, for **Sudbourne Guilda** 8423; s. Sudbourne Sunshine 3371, d. Sudbourne Gussie 5817 by Lowestoft 1900.
 158 II. (£10.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for **Bawdsey Merry Widow** 6139; s. Bawdsey Harvester 3076, d. Bawdsey Marionette 1820 by Prince Wedgewood 2364.
 155 III. (£5.)—KENNETH M. OLARK, for **Sudbourne Cowslip** 6401; s. Sudbourne Sunshine 3374 d. Sudbourne Council 5438 by Carthusian 2275
 157 R. N. & H. C.—THE MARQUIS OF GRAHAM, for **Easton Rookwood**.

Class 21.—Suffolk Fillies, foaled in 1907. [4 entries, 2 absent.]

- 162 I. (£20.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for **Bawdsey Wax Doll** 6493; s. Bawdsey Harvester 3076, d. Bawdsey China Doll 4209 by Prince Wedgewood 2364.
 160 II. (£10.)—KENNETH M. OLARK, Sudbourne Hall, Orford, for **Sudbourne Diamond** 6604, bred by the Rev. A. Maude, Badwell Ash, Bury St Edmunds; s. Bentley War Cry 3028, d. Badwell Depper 5721 by Tatler 2311.

Class 22.—Suffolk Mares, with Foals at foot. [6 entries, 2 absent.]

- 164 I. (£20.)—KENNETH M. OLARK, Sudbourne Hall, Orford, for **Sudbourne Daylight** 5924, foaled 1906, bred by W. G. Munnings, Harleston; s. Dennington Cupbearer 3088, d. Twilight 5366 by Homoea 2643 [Foal by Sudbourne Arab 3387].
 168 II. (£10.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for **Bawdsey Sunshine** 6381, foaled 1903, bred by Mrs. Thurman, Bacton; s. Conquest 2292, d. Duchess by Chieftain 1851. [Foal by Bawdsey Harvester 3076]
 167 III. (£5.)—SIR CUTHBERT QUILTER, BT., for **Bawdsey Mary** 4010, foaled 1901; s. Prince Wedgewood 2364, d. Woolpit Lass 4109 by Worcester 2270 [Foal by Bawdsey Harvester 3076].
 166 R. N. & H. C.—THE MARQUIS OF GRAHAM, for **Princess**.

Draught Horses.¹

Class 23.—Draught Geldings, foaled in 1906 or 1907. [6 entries, 1 absent.]

- 171 I. (£20.)—PETER DAVIES, Midlands Farm, Warburton, for **Midlands Bonny Boy** (Shire), roan, foaled 1907, bred by James Crane, Poulton-le-Fylde; s. Owston Tom 2366, d. Nellie by Hobling Harold 15647.
 170 II. (£10.)—THE ASHINGTON COAL COMPANY, LTD, Colliery Farms, Ashington, for **brown Clydesdale gelding**, foaled 1906.
 173 III. (£5.)—WILLIAM HEAP, Laurel Bank, Nelson, for **Harlequin** (Shire and Clydesdale), red roan and white, foaled 1906.
 175 R. N. & H. C.—A. C. SPARKES, Oldfield, Altrincham, for **Oldfield Drayman** 2nd.

Draught Horses in Gears.

Class 23a.—Single Working Geldings, five years old and upwards.¹

[14 entries, 3 absent.]

- 184 I. (£8.)—THE LIVERPOOL CORPORATION, for **John Bull** (Shire), bay, foaled 1905, bred by J. B. Gardner, Kinoulton, Notts. s. Intake Albert, d. Kinoulton Lily by Nottingham Conqueror.
 177 II. (£5.)—JOHN CADWALLADER, 354 Smithdown Road, Liverpool, for **Duke** (Shire), roan, foaled 1904, bred by Capt. W. H. O. Duncombe, Wrexley Park, Sandy; s. Castle Bromwich Keith 17863, d. Packington Brave Girl 13117 by Mounham Chief.
 185 III. (£3.)—THE LIVERPOOL CORPORATION, for **Inkerman** (Shire), bay, foaled 1905.
 181 R. N. & H. C.—THE LANCASHIRE AND YORKSHIRE RAILWAY COMPANY, Horse Department, Oldham Road, Manchester, for **Bobby**.

Class 23b.—Pairs of Working Geldings, five years old and upwards.¹

[11 entries, 1 absent.]

- 184-185 I. (£10.)—THE LIVERPOOL CORPORATION, for **John Bull and Inkerman**.
 181-183 II. (£6.)—THE LANCASHIRE AND YORKSHIRE RAILWAY, for **Bobby and Jack**.
 184-185 III. (£3.)—THE LIVERPOOL CORPORATION.
 182-182 R. N. & H. C.—THE LANCASHIRE AND YORKSHIRE RAILWAY, for **Gilbert and Derby**.

Class 24.—Draught Mares or Geldings.² [19 entries, 2 absent.]

- 609 I. (£3.) & 610 II. (£5.)—JOHN JARVIS & SONS LTD., 28 Brunswick Street, Liverpool.
 612 III. (£3.)—WILLIAM ROBERTS & SON, 78 Henry Street, Liverpool, for **Major**.
 613 IV. (£2.)—THOMAS SINGLETON, 180 Wadham Road, Bootle, for **Nobly**.

¹ Prizes given by the Liverpool Local Committee.

² Prizes given by the Liverpool Team Owners' Association, and confined to Members of that Association only.

Award of Live Stock Prizes at Liverpool, 1910. li

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 25. Pairs of Draught Mares or Geldings.¹ [18 entries, 1 absent.]

- 621 I. (£10.) & 625 II. (£8.) JOHN JARVIS & SONS, LTD., 28 Brunswick Street, Liverpool.
 627 III. (£4.) THOMAS SINGLETON 100 Wadham Road, Bootle.
 620 IV. (£2.) GARLICK & BURRELL, LTD., 23 Chapel Chambers North, Liverpool.
 631 E. N. & H. C. THOMAS WILSON, 38 Berry Street, Bootle.

Hunters.²

Class 26. Hunter Colts or Geldings, foaled in 1909. [13 entries, 3 absent.]

- 205 I. (£20.) SIR MERRICK R. BURRELL, BT., Knapp Castle, Horsham, for Sunbeam, chestnut colt; s. Rousseau, d. Surrenden 3751.
 213 II. (£10.) W. B. SWALLOW, Wootton Lawn, Ulceby, for Whisky, brown colt; s. Scotch Sign, d. Beatrice by Horizon.
 212 III. (£5.) W. H. SHIELDS, The Red House, Hartford, Cheshire, for chestnut gelding; s. Squadron Leader, d. Galloping Maid by Galloping Lad.
 200 IV. (£4.) LORD MIDDLETON, Birdsall House, York, for Hotspur, bay gelding; s. Wales, d. Hollyhock by Gordon.
 208 E. N. & H. C. LORD MIDDLETON, for Dervish.

Class 27. Hunter Geldings, foaled in 1908. [11 entries, 1 absent.]

- 224 I. (£20.) F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Cavendish, bay, bred by Mr. Stevens, York; s. Foundling.
 221 II. (£10.) T. R. SEATON, George Hotel, Aylebury, for Next Time 6, brown; s. Rhythm, d. Someday 3731.
 210 III. (£5.) EDWARD HODGSON, The Hollows, Bridlington, for Dreadnought, brown, bred by H. S. Malone, Ballymore, Ireland; s. Delamont, d. by Master Ned.
 216 IV. (£4.) G. E. GIBSON, M.R.C.V.S., Highfield House, Oakham, for Mayfair 11, brown; s. Wild Willow, d. Park Broom by Vanderbilt.
 220 E. N. & H. C. COLONEL H. JEROME, Bliton Hall, York, for Ludlow.

Class 28. Hunter Geldings, foaled in 1907. [11 entries, 1 absent.]

- 231 I. (£20.) G. W. WATSON, 7 Newby Terrace, Stockton-on-Tees, for Thornton (vol. 17, p. 798), golden chestnut, bred by John Barker, Thornton-le-Street, *via* Thrak; s. Chatbird, d. Tilly O'Farrell by Strathblane.
 233 II. (£10.) H. J. STORRY, Baulings, Lancaster, for Barrister, red roan; s. Underbred, d. Primrose by Conductor 14th.
 229 III. (£5.) EDWARD HODGSON, The Hollows, Bridlington, for Royalty, bay, bred by P. Hodgson, Beverley; s. Roe O'Neill.

Class 29. Hunter Fillies, foaled in 1909. [14 entries, 3 absent.]

- 240 I. (£20, R.N. for Champion,³ & E.N. for Cup.⁴) - GILBERT ROBINSON, Hinwick Hall, Wellingborough, for War Lady 3708, bay; s. Red Subit, d. Bellona by Thurlax.
 238 II. (£10.) SIR MERRICK R. BURRELL, BT., Knapp Castle, Horsham, for Albatross, chestnut; s. Ethelbruce, d. Speculation 3733 by Pinzon.
 248 III. (£5.) W. S. RIDENALGH, Kents Ford, Grange-over-Sands, for brown, bred by Edward Hodgson, The Hollows, Bridlington; s. Gallens, d. Sweetbriar 2nd by Red Prince 2nd.
 247 IV. (£4.) G. H. PATTINSON, Rosemoor, near Whitehaven, for Trixie, chestnut; s. Albert Moore, d. by Friar Rush.
 246 E. N. & H. C. ROBERT NEEDHAM, Boxton Lodge, Knutsford, for Eva.

Class 30. Hunter Fillies, foaled in 1908. [15 entries, 3 absent.]

- 183 I. (£20, Champion,³ & Cup.⁴) E. H. TOMLINSON, Raugoey, Grantham, for Travelling Lady 3823, chestnut, bred by G. W. Cross, Marnham Hall, Newark; s. Travelling Lad, d. Tot by Blue Blood.
 202 II. (£10.) W. HERBERT TAYLOR, Lower Woodsfield, Newland, Malvern, for Lady Somerset 3810, chestnut, bred by Joshua Clark, Tennis Court Farm, Huddersfield, Bristol; s. Perpetuity, d. Popsey 3038 by Pantheon.
 254 III. (£5.) MARY, DUCHESS OF HAMILTON, Manton Park, Wickham Market, for chestnut; s. St. Jacques, d. Toidy by Fanatic.
 250 IV. (£4.) W. S. RIDENALGH, Kents Ford, Grange-over-Sands, for The Gift 2nd 3828, brown, bred by Edward Hodgson, The Hollows, Bridlington; s. St. Pancras, d. Countess 2077 by Red Prince 2nd.

¹ Prizes given by the Liverpool Team Owners' Association, and confined to Members of that Association only.

² £100 towards these Prizes were given by a Member of the R.A.S.H. interested in the breeding of Hunters.

³ Champion Gold Medal given by the Hunters' Improvement Society for the best Filly not exceeding three years old, in Classes 29-31, which is registered with a number in the Hunter Stud Book.

⁴ The Royal Lancashire Society's "Manchester" Challenge Cup, value Fifty Guineas for the best Brood Mare or Filly in Classes 29-33.

lii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

251 V. (£4.)—F. G. COLMAN, Little Burgh, Burgh Heath, near Epsom, for *Rivalet* 3682, bay; s. Riverstown, d. Homely Lass by Homely.

260 R. N. & H. C.—PANDIA P. RODOONACHIE, Dunchurch, near Rugby, for *Flossy*.

Class 31.—Hunter Fillies, foaled in 1907. [10 entries, 1 absent.]

269 I. (£20.)—MRS. A. R. POOLE, King's Hill, Dursley, Glos., for *Prudence* 3655, brown; s. Perfection, d. Pamela 3616 by Pantomime.

273 II. (£10.)—W. G. WALDRON, The Gables, Brackley, for *Easter Egg* 3780 bay, bred by E. W. Robinson, Liscombe, Leighton Buzzard; s. Riverstown, d. Golden Leal by Tertius.

266 III. (£5.)—SIR MERRIK R. BURRELL, BT., Knepp Castle, Horsham, for *Arizona* 3276, chestnut; s. Red Prince 2nd, d. Speculation 3733 by Pinzon.

275 IV. (£4.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Sweets*, brown, bred by C. W. Cross, Marnham Hall, Newark; s. Minirock.

272 R. N. & H. C.—W. F. WAILES FAIRBAIRN, Askham Grange, York, for *Beta*.

Class 32.—Hunter Mares, with Foals at foot, up to from 12 to 14 stone.

[19 entries, 6 absent.]

289 I. (£20, & Champion.)—PANDIA P. RODOONACHIE, Dunchurch, near Rugby, for *Fleur-de-Lys* 2344, bay, foaled 1898, bred by R. N. Blyas, Stow-on-the-Wold; s. Herald, d. Tormonte by The Lawyer. [Foal by Riverstown.]

279 II. (£10.)—F. G. COLMAN, Little Burgh, Burgh Heath, near Epsom, for *Homely Lass* 1907, chestnut, aged, bred by C. Kelway Bamber, Priestlands, Ilorley; s. Homely, d. Sweetheart by Naphury. [Foal by Great Scott.]

290 III. (£5.)—W. H. SIII RS, The Red House, Hartford, Cheshire, for *Beechnut* 2nd 3284, bay, foaled 1901. [Foal by Blankney.]

285 IV. (£4.)—ROBERT NEEDHAM, Bexton Lodge, Knutsford, for *Rosemary* 2109, chestnut, foaled 1896, bred by the late Capt. Henderson, Invergowrie; s. Moss Hawk, d. Princess Patricia by Connaught. [Foal by Tate.]

276 V. (£4.)—SIR MERRIK R. BURRELL, BT., Knepp Castle, Horsham, for *Surprise* 3014, bay or brown, foaled 1902, bred by Lieut.-Col. Z. Walker, Fox Hollies Hall, Acock's Green; s. Silver King 54, d. My Treasure by Hidden Treasure. [Foal by Red Heart.]

292 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for *Glow-worm*.

Class 33.—Hunter Mares, with Foals at foot, up to more than 14 stone.

[7 entries, none absent.]

298 I. (£20, & R. N. for Champion.)—MISS WINIFRED HIGNETT, Offley Ley, Crews, for *Diana* 3568, bay-brown, foaled 1894, breeder unknown. [Foal by Travelling Lad.]

295 II. (£10.)—SIR MERRIK R. BURRELL, BT., Knepp Castle, Horsham, for *Speculation* 3733, bay, foaled 1898, bred by M. & T. Sedgwick, Northallerton; s. Pinzon. [Foal by Red Heart.]

296 III. (£5.)—SIR MERRIK R. BURRELL, BT., for *Surrenden* 3751, bay or brown, foaled 1899. [Foal by Red Heart.]

301 R. N. & H. C.—W. S. RIDGHALGH, Kents Ford, Grange-over-Sands, for *Faithful*.

Class 34.—Hunter Colt Foals, the produce of Mares in Classes 32 or 33.

[13 entries, 2 absent.]

312 I. (£10.)—W. F. WAILES FAIRBAIRN, Askham Grange, York, for *Peeler*, chestnut, foaled Jan. 20, s. Lord Bobs, d. Esterbelle by Esterling. [Exhibited with No. 301 in Class 32.]

305 II. (£5.)—J. L. CROSS, Catthorpe, Rugby, for bay, foaled March 7; s. Grudon 2d, d. Circus Maid by Pantomime. [Exhibited with No. 260 in Class 32.]

311 III. (£3.)—W. L. SMITH, The Red House, Hartford, Cheshire, for bay, foaled April 30; s. Blankney, d. Beechnut 2nd 3284. [Exhibited with No. 290 in Class 32.]

310 R. N. & H. C.—PANDIA P. RODOONACHIE, Dunchurch, near Rugby, for *Fresh-water*.

Class 35.—Hunter Filly Foals, the produce of Mares in Classes 32 or 33.

[10 entries, 3 absent.]

320 I. (£10.)—J. A. MULLENS, Barrow Hills, Longcross, Surrey, for bay, foaled March 16; s. Glenossal, d. Paleface by Ringoal. [Exhibited with No. 284 in Class 32.]

314 II. (£5.)—SIR MERRIK R. BURRELL, BT., Knepp Castle, Horsham, for *Sunray*, chestnut, foaled March 31; s. Red Heart, d. Surrenden 3751. [Exhibited with No. 290 in Class 32.]

317 III. (£3.)—RICHARD V. EARDLEY, Colehurst Manor, Market Drayton, for *Colehurst Dainty*, chestnut, foaled March 16; s. Ballinasloe, d. Alice. [Exhibited with No. 281 in Class 32.]

319 R. N. & H. C.—EDWARD HODGSON, The Hollows, Bridlington.

1 Champion Gold Medal given by the Hunters' Improvement Society for the best Mare four years and upwards in Classes 32 and 33, which is registered with a number in the Hunter Stud Book.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Hunter Riding Classes.¹

Class 36. Hunter Mares or Geldings, foaled in 1906, up to from 12 to 14 stone. [10 entries, 2 absent.]

- 331 I. (£15.) JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Suspense*, bay gelding, bred by Major C. W. Studdert; s. Sudd, d. Fairy Tale by *Romance*.
 332 II. (£10.) W. F. WAILES-FAIRBAIRN, Askham Grange, York, for *Walester*, chestnut gelding; s. Wales, d. Esterhella by *Esterling*.
 331 III. (£5.) F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Kingsway*, chestnut gelding, bred by Mr. Cairns, Abercrombie, Fife; s. Kings Bowman.
 336 IV. (£5.) STEPHEN W. FURNES, Tunstall Grange, West Hartlepool, for *Monarch*, grey gelding bred by W. Jordan, Carlton Lodge, Thrusk; s. Boykin, d. Snowdrop by *Emmentamer*.
 338 V. (£5.) EDWARD HODGSON, The Hollows, Bridlington, for *Barrister*, brown gelding, bred by David Evans, Cardiff; s. Red H.d, d. Lady Athol.
 333 E. N. & H. C. THOMAS WICKHAM-BOYNTON, Burton Agnes, Driffield, for *Rapier*.

Class 37. Hunter Mares or Geldings, foaled in 1906, up to more than 14 stone. [4 entries, none absent.]

- 330 I. (£15.) JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Skeffington*, bay gelding, bred by W. W. Tailby, Skeffington, Leicester; s. Blankney.
 334A II. (£10.) J. DEARDEN, Haycombe Farm Sutton Veny, Wilts, for *Bardsley*, bay gelding, bred by Pat Fitzgerald, Weatherstone, Co. Kilkenny; s. Young Navoyard, d. by *Passion Flower*.
 335 III. (£5.) J. & G. DICKINSON, Oak Mills, Oak-in-Carmel, for *Oak Majesty*, chestnut gelding, bred by H. Mackereth, Stoddard, Lancaster; s. Royal Majesty, d. Jew by *Carthusian*.

Class 38. Hunter Mares or Geldings (Novice), foaled in or before 1903, up to from 12 to 14 stone. [10 entries, 5 absent.]

- 312 I. (£15.) JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Brandysnap*, brown gelding, foaled 1904, bred by J. Connolly, Rossenmore, Black Hills Cross, Co. Louth; s. Silvegullion, d. *Sincerity* by *Frigh*.
 330 II. (£10.) JOHN DRACIE, Chapel Brampton, Northampton, for *Sandy*, chestnut gelding, foaled 1905, breeder unknown.
 341 III. (£5.) ROBERT STEPHENSON, Parkside Farm, Aston, Preston Brook, Warrington, for *Young Morgan*, bay gelding, foaled 1905, bred by Joseph Millington, Sutton Hall, Middlewich; s. Johnny Morgan.
 316 IV. (£5.) R. A. YERBURGH, M.P., Woodfold Park, Blackburn, for *Lady Leighton*, bay mare, foaled 1903, bred by Mr. Loke, Bucks.; s. Bumptious.

Class 39. Hunter Mares or Geldings (Novice), foaled in or before 1905, up to more than 14 stone. [9 entries, 3 absent.]

- 352 I. (£15.) JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Moorside*, bay gelding, foaled 1905, breeder unknown.
 348 II. (£10.) JOHN DRACIE, Chapel Brampton, Northampton, for *Champagne*, chestnut gelding, foaled 1904, breeder unknown.
 350 III. (£5.) GROFF KENYON, Blackshaw House, Brighton, Bolton, for *Scholar*, bay gelding, foaled 1904.
 349 IV. (£5.) W. H. FERRAND, Duchy House, Harrogate, for *Launier*, grey gelding, foaled 1905 bred by Col. Godman, Northallerton; s. *Lauricope*, d. by *Entertainer*.
 351 V. (£5.) JESSE COL. GEORGE MOORE, Great Meadow, Chattertown, Isle of Man, for *Togo*, bay gelding, foaled 1905; s. Strathern, d. Dollie by *Mumilo*.

Class 40. Hunter Mares or Geldings, foaled in or before 1906, up to from 12 to 13.7 stone. [18 entries, 7 absent.]

- 321 I. (£20, E. N. for Champion,* & E.N. for Cup.†) JOHN H. STOKES, for *Suspense*. (See Class 36.)
 359 II. (£15.) JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Zealot*, chestnut gelding, foaled 1905, bred by R. L. Fenwick, Little Belvoir, Melton Mowbray; s. *Whisperer*, d. by *Zeal*.
 332 III. (£10.) W. F. WAILES-FAIRBAIRN, for *Walester*. (See Class 36.)
 330 IV. (£5.) JOHN DRACIE, for *Sandy*. (See Class 38.)
 333 V. (£5.) THOMAS WICKHAM-BOYNTON, Burton Agnes, Driffield, for *Rapier* 3864, chestnut mare; s. Toledo, d. Bill on by *Runnymeth*.
 357 E. N. & H. C. GROFF KENYON, for *Welshman*.

¹ Prizes given by the Liverpool Local Committee.

* Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 30-42.

† The Royal Lancashire Society's "Storey" Challenge Cup, value Fifty Guineas, for the best Mare or Gelding in Classes 33-42.

liv Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 41.—*Hunter Mares or Geldings, foaled in or before 1906, up to more than from 13 7 and not more than 15 stone* [13 entries, 5 absent]

- 366 I. (£20, Champion,¹ & Cup,²)—W. A. SIMPSON-HINCHIFFE, 9 Park Parade Stables, Harrogate, for Broadwood, brown gelding foaled 1903, bred by J. Richardson, Saltown Manor, York; s. Red Eagle, d. by Selby.
 368 II. (£15.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for Gold Flame, bay gelding, foaled 1904, breeder unknown.
 369 III. (£10.)—JOHN H. STOKES, for Moorside. (See Class 39.)
 364 IV. (£5.)—GEOFF. KENYON, Blackshaw House, Brightmet, Bolton, for Slip-On, bay gelding, foaled 1905.
 349 V. (£5.)—W. H. FERRAND, for Laurier. (See Class 39.)
 335 E. N. & H. C.—J. & G. DICKINSON, for Oak Majesty.

Class 42.—*Hunter Mares or Geldings, foaled in or before 1906, up to more than 15 stone.* [9 entries, 4 absent]

- 369 I. (£20.)—JOHN DRAGE, Chapel Brampton, Northampton, for Kelly, brown gelding, foaled 1905, breeder unknown.
 348 II. (£15.)—JOHN DRAGE, for Champagne. (See Class 39.)
 371 III. (£10.)—GEOFF. KENYON, Blackshaw House, Brightmet, Bolton, for The Rector, brown gelding, foaled 1904.
 370 IV. (£5.)—EDWARD HODGSON, The Hollows, Bridlington, for Islington 18, brown gelding, foaled 1905, breeder unknown.
 351 V. (£5.)—LIEUT.-COL. GEORGE MOORE, for Togo. (See Class 39.)

Polo and Riding Ponies.³

Class 43.—*Polo and Riding Pony Stallions, foaled in or before 1907, not exceeding 14 2 hands.* [5 entries, none absent]

- 379 I. (£15, & Champion,⁴)—STEPHEN MUMFORD, Moreton Morrell, Warwick, for Spanish Hero 373, dark brown, foaled 1898, bred by J. W. Mowenthal, Stony Stratford; s. Kilwarlin, d. Spanish Maiden by Merry Hampton.
 376 II. (£10, & R. N. for Champion,⁴)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Othras (Supp. 107), bay, foaled 1905, bred by W. H. Elsey; s. Laeburn, d. Othery by King Monmouth.
 377 III. (£5.)—H. FAUDEL PHILLIPS, Mapleton Stud, Four Elms, Edenbridge, for Trysting Tree, bay, foaled 1905, bred by O Howard Taylor, Hampole Priory, near Doncaster; s. Mountain Ash 298, d. Confidential 234 by Rosewater 37.
 378 E. N. & H. C.—KEYNSHAM STUD CO., Keynsham, Bristol, for White Wings.

Class 44.—*Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1909.* [12 entries, 1 absent.]

- 380 I. (£15.)—MRS. A. R. POOLE, King's Hill, Dursley, Glos., for Oyster Shell, chestnut filly; s. Rudheath, d. Sengull 1824 by Sea Dog.
 382 II. (£10.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Silvester, chestnut colt; s. Othras, d. Silver Star by Night of the Laund.
 385 III. (£5.)—SIR WALTER GILBEY, BT., Elmhurst Hall, Essex, for Sparkling Crocus, chestnut filly; s. Merry Matchmaker, d. Crocus 1471 by Asotic.
 388 E. N. & H. C.—MRS. LEATHAM, The Manor, Bigden, Cirencester, for Singleton.

Class 45.—*Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1908* [9 entries, 2 absent.]

- 400 I. (£15.)—MRS. A. R. POOLE, King's Hill, Dursley, Glos., for Coral Reef, bay filly; s. Spanish Hero 373, d. Sengull 1824 by Sea Dog.
 399 II. (£10.)—TRESHAM GILBEY, Whitehill, Bishop's Stortford, for Honeysuckle, bay filly; s. Sandway, d. My Honey by Senatus.
 395 III. (£5.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Lady Sybil, chestnut filly; s. Kennington, d. Sybil by Petronel.
 39 E. N. & H. C.—H. FAUDEL PHILLIPS, for Bolt from the Blue.

Class 46.—*Polo and Riding Pony Fillies or Geldings, foaled in 1907.* [6 entries, none absent.]

- 403 I. (£15.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Romany, cream or dun filly; s. Right Forard 368, d. Santa Romana.
 402 II. (£10.)—SIR JOHN BARKER, BT., for Flash, bay gelding; s. Right Forard 368, d. Fashion.
 404 III. (£5.)—SIR JOHN BARKER, BT., for Tith, brown filly; s. Right Forard, d. Tith.
 405 E. N. & H. C.—TRESHAM GILBEY, Whitehill, Bishop's Stortford, for Sandicat.

¹ Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in hunters for the best Mare or Gelding in Classes 36-42.

² The Royal Lancashire Society's "Storey" Challenge Cup, value Fifty Guineas, for the best Mare or Gelding in Classes 36-42.

³ £50 towards these Prizes were given by the Polo and Riding Pony Society.

⁴ Champion Gold Medal given by the Polo and Riding Pony Society for the best Stallion or Colt in Classes 43-45.

[Unless other wise stated, each prize animal named below was "bred by exhibitor."]

Class 47. Polo and Riding Pony Mares, with Foals at foot, not exceeding 11 2 hands. [5 entries, 2 absent.]

- 111 I. (£15, & Champion.)¹ **THREHAM (HILBRY)**, Whitehall, Bishop's Stortford, for *Patricia* 771, chestnut, aged. [Foal by *Right Forward* 508.]
 108 II. (£10, & R. N. for Champion.)¹ **SIR JOHN BARKLER, BT.**, The Grange, Bishop's Stortford, for *Black Bella* 175, black, foaled 1888, bred by A. G. S. Johnstone; s. *Blackthorn*, d. by *Pyndale*. [Foal by *Onward*.]

Class 48. Polo and Riding Pony Mares or Geldings (light weight), foaled in or before 1906, not exceeding 11 2 hands. [6 entries, none absent.]

- 111 I. (£15.) **W. BALDING**, Eastfield, Hillmorton, Rugby, for *Spicebox*, bay mare, foaled 1901.

Class 49. Polo and Riding Pony Mares or Geldings (heavy weight), foaled in or before 1906, not exceeding 14 2 hands. [5 entries, none absent.]

- 421 I. (£15.) **JOHN McMOHRAN**, Burnage Hall Stud, Levenshulme, Manchester.

Cleveland Bays or Coach Horses.

Class 50. Cleveland Bay or Coaching Stallions, foaled in 1907 or 1908.
 [8 entries, 2 absent.]

- 131 I. (£15.) **FRANK H. STERICKER**, Westgate House, Pickering, for *King's Herald* 2503 (Coaching), foaled 1908, bred by George Purdon, Spaldington, Howden; s. *Radium* 2136, d. *Graceful* 1133 by *Beacon Prince* 2227.
 126 II. (£10.) **GEORGE ELDERS**, Toft House Farm, Aislaby, Sleights, Yorks., for *Hawthorn Hero* 1710 (Cleveland Bay), foaled 1908; s. *Rodale* 1892, d. *Lady Stanthorpe* 718 by *Hindling* 1901.
 430 III. (£5.) **FRANK H. STERICKER**, for *Kimberley* 2510 (Coaching), foaled 1908, bred by George Purdon, Spaldington, Howden; s. *Beacon Jubilee* 2228, d. *Molly* 1174 by *Royal Knight* 2155.
 427 **E. N. & H. O. JOHN LITT**, Cleveland Stud Farm, Rillington, York, for *Rillington Revival*.

Class 51. Cleveland Bay or Coaching Mares, with Foals at foot.
 [3 entries.]

- 432 I. (£15.) **GEORGE ELDERS**, Toft House Farm, Aislaby, Sleights, Yorks., for *Hawthorn Beauty* 1293 (Cleveland Bay), foaled 1905; s. *Rodale* 1892, d. *Aislaby Beauty* 1189 by *Prince George* 235. [Foal by *Breaston Prince* 2451.]
 131 II. (£10.) **J. H. TYRMAN**, Pond Farm, Hinderwell, for *Hinderwell Beauty* 1329 (Cleveland Bay), foaled 1900, bred by George Elders, Toft House Farm, Aislaby, Sleights; s. *Prince George* 235, d. *Molly* 949 by *Pitch and Toss* 1204. [Foal by *Saltburn Favourite*.]
 433 III. (£5.) **JOHN LITT**, Cleveland Stud Farm, Rillington, York, for *Rillington Bounce* (Cleveland Bay), foaled 1906; s. *Rillington Renown* 1614, d. *Mademoiselle* 1133 by *Lucky Hero* 1192. [Foal by *Isle of Avalon*.]

Hackneys."

Class 52. Hackney Stallions, foaled in 1909. [9 entries, none absent.]

- 437 I. (£20.) **SIR WALTER GILBRY, BT.**, Eilsenham Hall, Kewox, for *Sparkling Cadet*, chestnut; s. *Royal Danegelt* 5785, d. *Lady Cadet* 8024 by *Cadet* 1261.
 441 II. (£10.) **W. B. THURIN**, The Puddocks, Mill Hill, for *Adiffity*, chestnut, bred by Sir Samuel B. Boulton, Mt., Totteridge, Herts.; s. *Administrator* 8017, d. *Pliability* 17645 by *Petropol* 8292.
 442 III. (£5.) **ROBERT WHITWORTH**, Londonborough Stud, Market Weighton, for *Aaron*, chestnut, bred by H. G. Henton, The Ferry, Chatteris; s. *Polonius* 4981, d. *St. Agatha* 15400 by *Garrion Duke of Connaught* 8008.
 443 **E. N. & H. O. ROBERT WHITWORTH**, for *Acclamation*.

Class 53. Hackney Stallions, foaled in 1908. [11 entries, 3 absent.]

- 451 I. (£20.) **W. W. RYCHOFF**, Drake Hill Stud Farm, Bingley, Yorks., for *Angram Astonishment* 10930, dark chestnut, bred by Mrs. Fletcher & Sons, Angram, York; s. *St. Thomas* 7201, d. *Angram Sunflower* 17986 by *Ganymede* 2076.
 153 II. (£10.) **H. V. SHIMMINGHAM**, South Oreske, Fakenham, for *Oreske Royal Dane* 10995, chestnut; s. *Royal Danegelt* 5785, d. *Oreske Connie* 18130 by *Manfred* 5301.

¹ Champion Gold Medal given by the Polo and Riding Pony Society for the best Mare or Filly in Classes 1-47.

² Prizes given by the Liverpool Local Committee.

³ £75 towards the Prizes for Hackneys and Hackney Ponies were given by the Hackney Horse Society.

lvi *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 147 III. (£5.)—JOHN HIGNETT, Northwood, Middlesex, for Wembley Sunspot, by, bred by Sidney Brunton, St. Albans; s. Snowman 9803, d. Snowstorm 10615 by Contest 1748.
 416 IV. (£4.)—JOHN HIGNETT, for Seasoning, chestnut; s. Admiral Crichton 9778, d. Arline 11618 by Success 3rd 4536.
 454 R. N. & H. C.—ROBERT WHITWORTH, for Charles.

Class 54.—Hackney Stallions, foaled in 1907. [3 entries, 1 absent.]

- 156 I. (£20, Champion,¹ & Cup,²)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for Antonius 10359, chestnut, bred by R. Whitworth, Londesborough Stud, Market Weighton; s. Polonius 4931, d. Towthorpe Iris 19618 by Forest Star 7445.
 455 II. (£10, R. N. for Champion,¹ & R. N. for Cup,²)—WALTER BRIGGS, Burley Hall, Burley-in-Wharfedale, Yorks., for Albin Wildfire 10551, chestnut; s. Polonius 4931, d. Lady Milne 11153 by Agility 2799.

Class 55.—Hackney Fillies, foaled in 1909. [7 entries, 2 absent.]

- 462 I. (£20.)—MISS DORA SCHINTZ, Chiddwall Hall, Liverpool, for Bronze Venus, chestnut; s. Copmanthorpe Performer 9670, d. Ribble Venus 18528 by Royal Danegelt 5785.
 461 II. (£10.)—W. R. BYCROFT, Drake Hill Stud Farm, Bingley, Yorks., for Heaton Aquila, chestnut, bred by Stephen Chiff, Crayke Manor, Knaresborough; s. New Gold 9980, d. Crayke Aquila 18128 by Ganymede 2076.
 458 III. (£5.)—JOHN BEAL, Blanch, North Dalton, Driffield, for Blanch Eastern Queen, chestnut; s. Kirkburn Toreador 8534, d. Blanch Gay Girl 18023 by Hunmanby Duke.
 460 R. N. & H. C.—WILLIAM JOHNSON, Acresfield Stud, Woolton, Liverpool, for Acresfield What's On.

Class 56.—Hackney Fillies, foaled in 1908. [7 entries, none absent.]

- 466 I. (£20.)—RICHARD P. EVANS, Woodhatch House, Reigate, for Beckingham Ozarina 20518, chestnut, bred by Robert Surfleet, Beckingham, Gainsborough; s. Beckingham Flashlight 9116, d. Miss Helmsley 12953 by Danebury 4724.
 465 II. (£10.)—WALTER BRIGGS, Burley Hall, Burley-in-Wharfedale, Yorks., for Albin Ophelia 20474, chestnut; s. Polonius 4931, d. Lady Milne 11153 by Agility 2799.
 468 III. (£5.)—H. HINRICHSSEN, Henshall Hall, Congleton, for Roan's Queen 20989, dark chestnut, bred by Joseph R. Brown, High Roan's Farm, Strensall, Yorks.; s. Polonius 4931, d. Roan's Empress 17675 by Danebury 4724.
 467 R. N. & H. C.—CHARLES HENRY HART, Appletree Farm, York, for Craftonius.

Class 57.—Hackney Fillies, foaled in 1907. [9 entries, 2 absent.]

- 475 I. (£20, & Champion,³)—H. HINRICHSSEN, Henshall Hall, Congleton, for Lady Beckingham 20031, chestnut, bred by Robert Surfleet, Beckingham, Gainsborough; s. Beckingham Squire 8770, d. Miss Helmsley 12953 by Danebury 4724.
 473 II. (£10.)—RICHARD P. EVANS, Woodhatch House, Reigate, for Woodhatch Ruth 20383, chestnut; s. Evanthus 8463, d. Terrington Ruth 18988 by Lord Newton 2nd.
 474 III. (£5.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for Spring Bells 20348, chestnut, bred by the late John Smith, Adderley, Monifeth; s. Mathias 6173, d. Ring o' Bell 12555 by Goldfinder 6th 1791.
 479 R. N. & H. C.—ALFRED SMITH, Stud Farm, Crank, St. Helens, for Windle Sunshine.

Class 58.—Hackney Mares, with Foals at foot, over 14, and not exceeding 15½ hands. [4 entries, 2 absent.]

- 484 I. (£20.)—W. R. LYSAGHT, Castleford, Chappetow, for Hopwood Clematis 18876, chestnut, foaled 1902, bred by Frank L. Batchelor, Hopwood, Alvechurch; s. Rowador 4984, d. Mamel 2310 by Jaded 1261. [Foal by Leopard 9733.]
 482 II. (£10.)—JOHN HIGNETT, Northwood, Middlesex, for Dagmar's Pride 15024, chestnut, foaled 1901, bred by Moss Brothers, The Parks, Ripon; s. Connaught 1463, d. Princess Dagmar 8383 by Denmark 177. [Foal by Mathias 6173.]

Class 59.—Hackney Mares, with Foals at foot, over 15½ hands. [7 entries, 3 absent.]

- 486 I. (£20, & R. N. for Champion,³)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for Gallant Girl 15093, chestnut, foaled 1901; s. Revival 7236, d. Titania 7503 by Gallant Sportsman 2075. [Foal by Antonius 10659.]

¹ Champion Gold Medal, given by the Hackney Horse Society for the best Stallion in Classes 52-54.

² The Hackney Horse Society's "Presidents' Champion Cup, value Twenty-five Guineas, for the best Stallion in Classes 52-54.

³ Champion Gold Medal, given by the Hackney Horse Society for the best Mare or Filly in Classes 55-59.

Award of Live Stock Prizes at Liverpool, 1910. lviii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

487 II. (£10.) JOHN HIGNETT, Northwood, Middlesex, for *Wembley Princess* 20312, chestnut foaled 1906, bred by John Stewart, Yapham Hall, Pocklington; s. Bugthorpe Victor 8771, d. Yaphum Gladys 17071 by Millington Swell 5724. [Foal by Polonus 1931.]

490 III. (£5.) W. J. MILTON, Castle Stud, 131 Chester Street, Birkenhead, for *Kinva* 16624, chestnut, foaled 1902, bred by Walter Blakey, Fullard, York; s. His Majesty 2513, d. Charm 7701 by Ganymode 2076. [Foal by The Marquis 6122.]

Class 60. Hackney Foals, the produce of Mares in Classes 58 or 59.

[8 entries, 2 absent.]

492 I. (£10.) SIR WALTER GILBRY, BT., Elsenham Hall, Essex, for chestnut filly, foaled Feb. 28; s. Antonius 10560, d. Gallant Girl 15093 by Revival 7236. [Exhibited with No. 186 in Class 59.]

497 II. (£5.) W. R. LEAUGHT, Castleford, Clapstow, for chestnut colt, foaled Feb. 2; s. Leopard 9783, d. Hopwood Clematis 15876 by Rosador 4961. [Exhibited with No. 181 in Class 58.]

493 III. (£3.) JOHN HIGNETT, Northwood, Middlesex, for black filly, foaled Feb. 1; s. Mathias 6173, d. Dagmar's Pride 15021 by Connaught 1153. [Exhibited with No. 482 in Class 58.]

495 E. N. & H. O. JOHN HIGNETT, for chestnut filly, foaled March 7

Hackney Ponies.

Class 61. Hackney Pony Stallions, foaled in or before 1907,

not exceeding 14 hands. [9 entries, 1 absent.]

500 I. (£15.) JOSHUA BAILL, Southworth Hall, Warrington, for Southworth Swell, 11219, bay, foaled 1907, bred by E. W. Sankey, Heath Farm, Croft, Lancs.; s. Pinderfields Horace 7952, d. Tilsdon Maid 16278 by Berkeley Model 3683.

507 II. (£10.) C. H. RAVENHILL STOCK, Walton-le Dale, Preston, for *Son o' Horace*, 8654, bay, foaled in 1902; s. Sir Horace 5102, d. Witch o' Denmark 16356 by Sir Gibbie

508 III. (£5.) HOWARD WATERHOUSE, Clarendon, Killiney, Co. Dublin, for *Berkeley Nugget* 8371, bay, foaled 1902, bred by the late A. S. Day, Berkeley Towers, Crewe; s. Golden Rule 6380, d. Peggy Sure 4526 by Model 1051.

501 E. N. & H. O. FRANK BATMAN, The Lodge, Shinfield, Reading, for *Lyndhurst Phosphorus*.

Class 62. Hackney Pony Colts, Fillies, or Geldings, foaled in 1908,

not exceeding 13'2 hands. [6 entries, none absent.]

514 I. (£15.) DAVID R. THOMAS, Tanrallt Stud, Talybont, for *Tanrallt Fireboy* 11228, bay colt, bred by O. T. Price, Lyndhurst, Brokehurst; s. Fireboy 7440, d. Lyndhurst Paula 16780 by Tinsington Horace 7053.

510 II. (£10.) RICHARD P. EVANS, Woodhatch House, Reigate, for *Tinsington Vandyke* 11230, bay colt, bred by Sir Gilbert Greenall, BT., Walton Hall, Warrington; s. Sir Horace 5102, d. Tinsington Venus 14823 by Golden Rule 6380.

512 III. (£5.) W. WARD HARGRAVE, Normans, Rusper, Herts., for *Rusper Consul* 11194, bay colt, bred by Sir Gilbert Greenall, BT., Walton Hall, Warrington; s. Tinsington (Hiden) 9042, d. Tinsington Constance 16998 by Sir Horace 5402.

511 E. N. & H. O. FREDERICK HARDWICK, The Hollies Farm, Over Peover, Knutsford, for *Lady Hardwick*.

Class 63. Hackney Pony Fillies or Geldings, foaled in 1907,

not exceeding 13'3 hands. [5 entries, none absent.]

516 I. (£15.) WILLIAM FOSTER, Mel-Valley, Mowley, Warrs., for *Mel-Valley's Best of All* 20861, brown filly, bred by D. L. Jones, Egerhendy, Tregaron; s. Tregaron Horace 9476, d. by Alonzo the Brave 2nd 1973.

518 II. (£10.) W. WAINWRIGHT & SONS, The Pony Stud, Talks, near Stoke-on-Trent, for *Talks Fire Queen* 20278, bay filly; s. Fireboy 7440, d. Royal Magic 18469 by Dane Royal 5576.

517 III. (£5.) JOHN JONES & SONS, Dinorlh Hall Pony Stud, Jolwyn Bay, for *Lillywen* 20828, bay filly; s. Julius Caesar 2nd 5068, d. Eira Jones No. 1296 F.S. by Winni George 2440.

518 E. N. & H. O. JOHN HODGFIELD, Higher House, Thurston Clough, Delph, Yorks., for *Thurston Princess*.

Class 64.—Hackney Pony Mares, with Foals at foot,

not exceeding 14 hands. [8 entries, 1 absent.]

522 I. (£15.) DAVID R. THOMAS, Tanrallt Stud, Talybont, for *Lyndhurst Paula* 16780, bay, foaled 1908, bred by Sir Gilbert Greenall, BT., Walton Hall, Warrington; s. Tinsington Horace 7656, d. Merry Polly 8250 by Merry Sunshine 1523. [Foal by Fireboy 7440.]

521 II. (£10.) MISS MURGAIR LORT, Castlemal, Carnarvon, for *Cassie Brown* 19821, bay, foaled 1901; s. Cassius 2897, d. Biddy Bawn by Sir George 778. [Foal by Sir Horace 5402.]

lviii Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Driving Classes.¹

Class 65. —*Harness Mares or Geldings, Novices, not exceeding 14 hands.*

[13 entries, none absent.]

- 527 I. (£15).—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for *Mel-Valley Flame*, bay gelding, foaled 1906, bred by Walter Cliff, Melbourne Hall, York; s. Royal Success 8895, d. Wortley Bell 14873 by Sir Horace 5402.
 531 II. (£10).—J. H. TATE, 92 Freeman Street, Grimsby, for *Shirley Fly* 18002, bay mare, foaled 1905, bred by J. Jones, Whitegate Stud, Wrexham; s. His Majesty 2513, d. Whitegate Crocker 18339 by Whitegate Swell 6033.
 528 III. (£5).—WILLIAM FOSTER, for *Mel-Valley's Master Key*, black brown gelding, foaled 1904, bred by W. Williams, Cileun Aeron, Cardigan-shire; s. Hexham 6100.
 525 IV. (£5). THOMAS R. EVANS, 11 Dale Street, Liverpool, for *Horton Maggie*, black mare, foaled 1906; s. Maggie's Danegelt 7183, d. Omen by Sir Horace 5402.
 533 R. N. & H. C.—A. J. WILLETT, Whitcroft, Stockton Heath, for *Fire Belle*.

Class 66.—*Harness Mares or Geldings, Novices, over 14 and not exceeding 15 hands.* [19 entries, 6 absent.]

- 545 I. (£15).—JACK MAJOR, The Castle, Sledmere, York, for *Ryedale Gertie* 18360, chestnut mare, foaled 1905, bred by W. J. Wilson, Kirby Misperton, Pickering; s. St. Thomas 7261, d. by Garton Duke of Connaught 3009.
 535 II. (£10).—MRS HARTLEY BATT, 20 Westbourne Street, London, W., for *Princess May*, chestnut mare, foaled 1904.
 552 III. (£5).—WALTER WEBB-WARE, 14 Solwood Place, London, S.W., for *Aranya*, brown mare, foaled 1905, bred by John Wotherpoon, Murhouse, Motherwell; s. Mathias 6473, d. Golden Lily 8938 by Goldfinder 6th 1791.
 547 IV. (£5).—ALFRED H. READ, Plymyard, Eustham, Cheshire, for *Coldspring Glory* 19432, chestnut mare, foaled 1904, bred by W. Sugden, Cullingworth, Bradford; s. Danebury 4724, d. Ella 7818 by Danegelt 174.
 546 R. N. & H. C.—J. MILLER, Dairy Coates Inn, Hebble Road, Hull, for *Studholme King*.

Class 67.—*Harness Mares or Geldings, Novices, over 15 hands.*

[20 entries, 8 absent.]

- 568 I. (£15).—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire, for *Grand Viceroy*, black gelding, foaled 1904, bred by Wm. Strang, The Peel, Bushbie, Glasgow; s. Mathias.
 568 II. (£10).—THOMAS CATLOW, Higher Trup Stud, Padham, Lancs., for *Pride of Mathias* 20950, chestnut mare, foaled 1905, bred by the Halewood Stud Co., Halewood, Liverpool; s. Mathias 6473, d. Pride of Morn 10428 by Astonishment 2nd 3423.
 567 III. (£5).—JOHN KERR, Loudwater, Rickman-worth, for *Loudwater Gladness*, bay mare, foaled 1906, bred by Iain Ramsay, Kildalton, Isle of Islay; s. Polomus 4931, d. Hedon Delight 13550 by Venice 4565.
 559 IV. (£5).—W. H. CLARK, White Hall, Winestead, Hull, for *Skeffing Lily* 17737, bay mare, foaled 1903; s. Skuffling Fireway 8650, d. Winsetts Lily 9806 by Saxon 2074.
 563 R. N. & H. C.—FRANK I. BATCHELOR, Hopwood, Alvechurch, for *Shirley Violet*.

Class 68.—*Harness Mares or Geldings, not exceeding 14 hands.*

[9 entries, none absent.]

- 527 I. (£15).—WILLIAM FOSTER, for *Mel-Valley's Flame*. (See Class 65.)
 531 II. (£10).—J. H. TATE, for *Shirley Fly*. (See Class 65.)
 573 III. (£5).—WILLIAM & JAMES FERGUSON, The Presbury Stud, near Macclesfield, for *District Sensation*, roan gelding, foaled 1901, bred by Sir Gilbert Greenall, Bt., Walton Hall, Warrington; s. Sir Horace 5402, d. Dignity and 11752 by Louis Danegelt.
 528 IV. (£5).—WILLIAM FOSTER, for *Mel-Valley's Master Key*. (See Class 65.)
 530 R. N. & H. C.—ALFRED SMITH, Crank, St. Helens, for *Tissington Merrilees*.

Class 69.—*Harness Mares or Geldings, over 14 and not exceeding 15 hands.* [16 entries, none absent.]

- 545 I. (£15).—JACK MAJOR, for *Ryedale Gertie*. (See Class 66.)
 578 II. (£10).—PHILIP SMITH, Haridon House, Ashton-on-Mersey, for *Queen of Ayr* 20178, bay mare, foaled 1903, bred by Mrs. Walker, Limesfield, West Calder; s. Mathias 6473, d. Dearnet 2nd 10827 by Lord Rickell 5288.
 575 III. (£5).—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for *Mel-Valley's Tissington Belle*, brown mare, foaled 1901, bred by Sir Gilbert Greenall, Bt., Walton Hall, Warrington; s. Tissington Horace 7633, d. Tissington Belle 14003 by Sir Baldie 5814.
 552 IV. (£5).—WALTER WEBB-WARE, for *Aranya*. (See Class 66.)
 535 R. N. & H. C.—MRS. HARTLEY BATT, for *Princess May*. (See Class 66.)

¹ Prizes given by the Liverpool Local Committee.

Award of Live Stock Prizes at Liverpool, 1910. lix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 70. *Harness Mares or Geldings, over 15 and not exceeding 15½ hands.* [12 entries, none absent.]

- 579 I. (£15, R. N. for Champion,¹ R. N. for Medal,² & R. N. for Cup.³) - NIGEL C. COLMAN, Nork Park, Epsom Downs, for *Authority*, bay gelding, aged, bred by S. R. Tennant, Driffeld; s. Gaiymede 2076, d. Family Pride 2726 by Lord Derby 2nd 437.
- 583 II. (£10.) PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *Haddon Marphil*, chestnut gelding, foaled 1901, bred by J. J. Kempey, Market Weighton; s. Polonius 4931, d. Lady Whimmoor 18350 by Edenynag 5089.
- 582 III. (£25.) MISS ELLA S. ROSS, Bechfield, Sale, Cheshire, for *Grand Vulcan*, black gelding, foaled 1903, bred by Robert O. Marshall, Burntsheilds, Kilbarnau; s. Mathias 6473, d. Rosetta 8426 by Lord Derby 2nd 417.
- 581 IV. (£25.) HOWARD FRANK, Rushall, Wimbledon Common, for *Wild Rose* (Dunhill) 10876, bay mare, foaled 1902, bred by William Horsley, Huby, Easingwold; s. Rosador 4081, d. Scrayingham Nancy 17012 by Garton Duke of Connaught.
- 568 R. N. & H. C. - MISS ELLA S. ROSS, for *Grand Viceroy*.

Class 71. - *Harness Mares or Geldings, over 15½ hands.*

[13 entries, none absent.]

- 580 I. (£15, Champion,¹ Medal,² & Cup.³) - PAUL HOFFMANN,⁴ (Hardigan Mansions, Richmond Hill, Surrey, for *Riot*, dark chestnut gelding, foaled 1902, bred by W. Burdett Coutts M.P., Brookfield Stud, Highgate; s. Polonius 4931, d. Emoute by Candidate 920.
- 500 II. (£10.) - MISS DORA SCHINTZ, Childwick Hall, Liverpool, for *Morocco*, chestnut gelding, foaled 1900, bred by G. N. Stephenson, Manor House, Gootmanham; s. Revival 7263, d. Maxflower 765 by Lord Derby 2nd 417.
- 558 III. (£25.) THOMAS CATLOW, for *Fride of Mathias*. (See Class 67.)
- 589 IV. (£25.) MISS DORA SCHINTZ, for *Catalina* 17320, chestnut mare, foaled 1902, bred by W. Burdett-Coutts, M.P., Brookfield Stud, Highgate; s. Polonius 4931, d. Cuckoo Bright 10803 by Last Fashion 1313.
- 581 R. N. & H. C. PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *Guy Vernon*.

Class 72. - *Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven in Double Harness.* [4 entries, none absent.]

- 584 & 593 I. (£15.) MRS. FREDERICK E. COLMAN, Nork Park, Epsom Downs, for *Crystalline*, brown mare, aged, bred by the late Frederick E. Colman; s. Royal Danegelt 5782, d. Moonlight 143 by Old Times 1883; and *Alice Garton*, brown mare, aged, bred by R. Ford, Driffeld; s. President Roosevelt 8286, d. Arton Mustard 18409 by Mathias 6473.
- 535 & 592 II. (£10.) - MRS. HARTLEY BATT, for *Princess May* (see Class 66); and *Queen Alexandra*, chestnut mare, foaled 1901.

Class 73. - *Pairs of Harness Mares or Geldings, 15 hands, to be driven in Double Harness.* [9 entries, none absent.]

- 598 & 599 I. (£15, & Cup.¹) JOHN KERR, Loudwater, Rickmansworth, for *Loudwater Diana Vernon*, bay mare, foaled 1900; and *Loudwater Bob Roy*, bay gelding, foaled 1905, bred by J. C. McKibbin, Windermere; s. Polonius 4931, d. Lady Glory 15223 by Garton Duke of Connaught 3000.
- 600 & 600 II. (£10, & R. N. for Cup.¹) MISS DORA SCHINTZ, for *Mogador*, chestnut gelding, foaled 1903, bred by Sir Gilbert Greenall, Bt., Walton Hall, Warrington; s. Goldfinder 6th, d. Rachel; and *Morocco* (see Class 71).
- 588 & 583 III. (£25.) MISS ELLA S. ROSS, for *Grand Viceroy* (see Class 67); and *Grand Vulcan* (see Class 70).
- 584 & 595 IV. (£25.) EDWARD H. BROWN, for *Beckingham Flashlight* 8116, chestnut gelding, foaled 1901, bred by Joseph Oxley, Bole Ham-borough; s. Beckingham Squire 8070, d. Bole Princess 16067 by Lord Melton 3100; and *Beckingham Princess* 18006, chestnut mare, foaled 1905, bred by Robert Surtees, Beckingham, Gainsborough; s. Beckingham Squire 8070, d. Beckingham Lady Helmsley 14919 by Garton Duke of Connaught 3000.
- 601 & 591 R. N. & H. C. - PHILIP SMITH, for *Beau of Ayr*, and *Guy Vernon*.

Class 74. *Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven Tandem.* [4 entries, none absent.]

- 593 & 594 I. (£15, & R. N. for Cup.¹) MRS. FREDERICK E. COLMAN, for *Alice Garton* and *Crystalline*. (See Class 72.)

¹ Gold Challenge Cup, value Fifty Guineas, given by gentlemen interested in Harness Horses for the best animal in Classes 65-71.

² Gold Medal, given by the Hackney Horse Society for the best Mare or Gelding in Classes 65-71, the produce of a registered Hackney Stallion.

³ The Royal Lancashire Society's "Tong" Challenge Cup, value Twenty-five Guineas, for the best horse in Classes 65-71.

⁴ The Gold "Viking" Challenge Cup, value Fifty Guineas, given by a Member of the R.A.S.E. for the best pair in Classes 72 and 73.

⁵ The Gold "Venture" Challenge Cup, value Fifty Guineas, given by a Member of the R.A.S.E. for the best Tandem in Classes 74 and 75.

1x Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

538 & 539 II. (£10.)—L. COOKSON, Sydney, Wellington, Salop for Enchanter 9702, bay gelding, foaled 1905, bred by John Makenzie, Newton-le-Willows; s. Blaze 2nd 2378, d. Pinnore Dame 7282 by Candidite 620; and Fascinator, bay gelding, foaled 1905, bred by John Makenzie, Newton-le-Willows; s. Sir Hector 8018, d. Daisy Belle 6511 by Curlew 1755.

Class 75.—Pairs of Harness Mares or Geldings, over 15 hands, to be driven Tandem. [8 entries, none absent.]

589 & 590 I. (£15, & Cup.)—MISS DORA SCHINIZ, for Catalina and Morocco. (See Class 71.)

579 & 580 II. (£10.)—NIGEL C. COLMAN, for Authority (see Class 70); and Cristoha 17233, b.v. mare, foaled 1904, bred by R. P. Evans, Reigate; s. Polonius 1931, d. Woodhatch Cristobelle 18373 by Ganymede 2076.

568 & 583 III. (£5.)—MISS ELLA S. ROSS, for Grand Viceroy (see Class 67); and Grand Vulcan (see Class 70).

555 & 554 IV. (£5.)—MISS A. SYLVIA BROCKLEBANK, Irton Hall, Holmrook, Cumberland, for Hull Lady 20761, bay mare, foaled 1904, bred by F. T. Jennings, White House, Storwood; s. Sensationalist 5399, d. Hull Princess 20705 by Prince Alfred 1325; and District Sympathy 20630, bay mare, foaled 1904, bred by George Fewson, Hemp-holme Hall; s. Garton Grand Duke 7085, d. by Chocolate Junior 4185.

591 & 601 E. N. & E. C.—PHILIP SMITH, for Guy Vernon and Beau of Ayr.

Four-in-hand Teams.

Class 76.—Mares or Geldings. [4 entries, none absent.]

D I. (£20, & Cup.)—MISS ELLA S. ROSS, Beechfield, Sale, for four black geldings.

B II. (£15.)—EDWARD H. BROWN, Highwood, Roehampton, for four chestnuts.

A III. (£10.)—MISS A. SYLVIA BROCKLEBANK, Irton Hall, Holmrook, for two bay mares and two bay geldings.

C IV. (£5.)—JOHN W. HARVIE, Kingsmead, Bidston, for four bay geldings.

Shetland Ponies.

Class 77.—Shetland Pony Stallions, foaled in or before 1907, not exceeding 10½ hands. [7 entries, 1 absent.]

639 I. (£10, & Champion.)—WILLIAM MUNGALL, Transy, Dunfermline, for Silverton of Transy, black, foaled 1906; s. Seaweed 333, d. Silver Queen 1197 by Oman 83.

635 II. (£5, & R. N. for Champion.)—THE LADIES E. & D. HOPE, Great Hollenden, Underriver, Sevenoaks, for Helium 452, dark brown dun, foaled 1905; s. Haldor 270, d. Helga 528 by Lord of the Isles 28.

338 III. (£3.)—WILLIAM MUNGALL, for Eirik 440, black, foaled 1905, bred by H. F. Anderson, Varla, Shetland; s. Besieger 235, d. Gudrunna 1716 by Erneer 131.

637 E. N. & E. C.—R. W. R. MACKENZIE, Earls Hall, Leuchars, for Helmet of Earls Hall.

Class 78.—Shetland Pony Mares, with Foals at foot, not exceeding 10½ hands. [8 entries, 1 absent.]

645 I. (£10.)—WILLIAM MUNGALL, Transy, Dunfermline, for Danish Queen 1421, black, foaled 1895, bred by the Marquis of Londonderry, K.G., Seaham Hall; s. Odin 32, d. Dinah 525 by Lord of the Isles 28. [Foal by Silverton of Transy.]

640 II. (£5.)—MRS. CHOLMELEY, King-down House, Swindon, for Banshee 2114, black, foaled 1905, bred by the Ladies E. & D. HOPE, Great Hollenden, Underriver, Sevenoaks; s. Haldor 270, d. Bretta 811 by Odin 32. [Foal by Duncan 117.]

612 III. (£3.)—THE LADIES E. & D. HOPE, Great Hollenden, Underriver, Sevenoaks, for Vementry 2nd 1104, brown, foaled 1892, bred by the Marquis of Londonderry, K.G., Seaham Hall; s. Lord of the Isles 28, d. Vesta 215 by Prince of Thule 36. [Foal by Helium 13.]

641 E. N. & E. C.—THE LADIES E. & D. HOPE, for Corona.

Welsh Ponies.

Class 79.—Welsh Pony Stallions, foaled in or before 1907, not exceeding 12 hands. [5 entries, 1 absent.]

648 I. (£10, & Champion.)—SIR WALTER GILBEY, Bt., Elsenham Hall, Essex, for Shooting Star 73, dark iron grey, foaled 1901, bred by S. M. Wilmot, The Chalet, Alveston; s. Dyall Starlight 4, d. Alveston Belle 572 by Cymro.

¹ The Gold "Venture" Challenge Cup, value Fifty Guinea, given by a Member of the R.A.S.E. for the best Tandem in Classes 74 and 75.

² Gold Challenge Cup, value Fifty Guinea, given by a Member of the R.A.S.E. interested in Coaching for the best team in Class 76.

³ Champion Silver Medal given by the Shetland Pony Stud Book Society for the best animal in Classes 77 and 78.

⁴ £18 towards these Prizes were given through the Welsh Pony and Cob Society.

⁵ Silver Medal given by the Welsh Pony and Cob Society for the best Stallion in Class 79.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 652 II. (£5.) E. JONES, Manoravon, Llandilo, for Greyhight 80, white, foaled 1901; s. Dyoll Starlight 4, d. Mylanwy 356.
 619 III. (£3. & E. N. for Champion.) MRS H. D. GREENE, Grove, Craven Arms, for Grove Ballistite 200, grey, foaled 1903, bred by H. Meunie Lloyd, Deliryn, Llanwrda; s. Dyoll Starlight 4, d. Dyoll Bala Gal 65.

Class 80. Welsh Pony Mares, with Foals at foot, not exceeding 12 hands
 [8 entries 1 absent.]

- 657 I. (£10.) - THOMAS B. LEWIS, Bronallt, Llanwrtyd Wells, for Mountain Marvel, red roan, foaled 1903, bred by Evan Davies, Vanog, Abergwesyn. [Foal by Cream of Epynt 344]
 654 II. (£5. & Champion.) - MRS. H. D. GREENE, Grove, Craven Arms, for Grove Dusky Mite 2189, black, foaled 1903. [Foal by Knighton Sir Horace 315]
 656 III. (£3. & E. N. for Champion.) - JOHN JONES & SONS, Dinarth Hall Pony Stud, Colwyn Bay, for Mountain Lass 1283, red roan, foaled 1899 bred by Dr Harris, Aberystwyth; s. Wild Wag of Wales, d. Tregaron Bass. [Foal by a Mountain pony.]
 655 E. N. & H. C. - MRS. H. D. GREENE, for Grove Gwladys.

Milk Turnouts.³

Class 81. Turnouts, ponies not to exceed 14 2 hands. [12 entries, none absent.]

- 071 I. (£5.) ROBERT VOON, 3 Nash Street, Scotland Place, Liverpool, for bay gelding.
 663 II. (£3.) - JAMES HUNTER, Grange Farm Dairy, 158 Lawrence Road, Wavertree, Liverpool, for Activity, bay mare, foaled in 1904, bred by Dr. Dalton Ewbank, Berranthwaite, Kirby Stephen, s. Garton Performer, d. Activity by Bounding Willow.
 668 III. (£2.) - JOHN THWAITTE, 35 Smithdown Road, Liverpool, for Fairy Queen, brown mare, foaled in 1905
 669 IV. (£1.) - RICHARD THWAITTE, 53 Anerley Street, Eadie Road, Liverpool, for Moon-hill Mimie 20879, bay mare, foaled in 1904.
 665 E. N. & H. C. - JOHN MOORE, St. Michael's, Liverpool, for Bobby.

Class 82. Turnouts, horses exceeding 14 2 hands. [13 entries, none absent.]

- 677 I. (£5.) R. BATTY & SONS, Sefton Park and Wavertree, Liverpool, for Roxey, bay gelding.
 678 II. (£3.) - WILLIAM T. DEAN 8 Allwood Street, Anfield, Liverpool, for Lady Andy, black mare.
 679 III. (£2.) - JAMES HUNTER, Grange Farm Dairy, 158 Lawrence Road, Wavertree, Liverpool, for Diamond, brown mare foaled in 1905, bred by Thomas Hاندley, Park House, Ravenstonedale; s. Troubad r, d. Bell by Yorkshire Fashion.
 675 IV. (£1.) - R. BATTY & SONS, 130 Macdonald Street, Wavertree, Liverpool, for Lady Nellie Lock 2791, roan mare, foaled in 1904.
 674 E. N. & H. C. - C. E. BATEMAN, 10 Aigburth Vale, Liverpool, for Bessie, bay mare.

JUMPING COMPETITIONS.⁴

Class A. --Mares or Geldings. [24 entries.]

- 23 I. (£25.) J. TAYLOR, 47 Moor Street, Ormskirk, for Captive Maid, bay mare.
 18 II. (£10.) - F. W. FOSTER, Etwell, Derby, for Snowball, grey gelding.
 24 III. (£5.) - F. W. FOSTER.
 9 IV. (£5.) - T. & H. WARD, Pinchinthorpe, Great Ayton, Yorks., for Fisherman, bay gelding.
 5 V. (£5.) F. VOLLER (GRANGE, Alveston, Nantwich, for Rufus, chestnut gelding.
 7 E. N. & H. C. - ALFRED O. DAVIES, Bronwyfa, Machynlleth, for Veto.

Class B. --Mares or Geldings. [21 entries.]

- 17 I. (£20.) - F. W. FOSTER, Marsh Farm, Etwell, Derby, for Paddie, bay gelding.
 18 II. (£10.) HARRY BERRY, Manor House Stables, Melton Mowbray, for Mr. Porter, bay gelding.
 2 III. (£5.) - T. & H. WARD, Pinchinthorpe, Great Ayton, Yorks., for Fisherman, bay gelding.
 18 IV. (£5.) R. G. EASTHERBY, Mount Pleasant, Eacrick, York, for Piper, bay gelding.
 12 V. (£5.) F. VOLLER GRANGE, Alveston, Nantwich, for Rufus, chestnut gelding.

¹ Silver Medal given by the Welsh Pony and Cob Society for the best Stallion in Class 78.

² Silver Medal given by the Welsh Pony and Cob Society for the best Mare in Class 80.

³ Prizes given by the Liverpool and District Cowkeepers' Association, and confined to Members of that Association only.

⁴ Prizes given by the Liverpool Local Committee.

lxii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class C.—*Mares or Geldings.* [22 entries.]

- 5 I. (£15).—HARRY BEEBY, Minor House Stables, Melton Mowbray, for Mr. Porter, bay gelding.
 14 II. (£10).—T. & H. WARD, Pinchinthorpe, Great Ayton, Yorks, for Fisherman, bay gelding.
 3 III. (£5).—F. W. FOSTER, Marsh Farm, Etwell Derby, for Snowball, grey gelding.
 17 IV. (£5).—E. G. RASTERBY, Mount Pleasant, Ewcliffe, York, for Piper, bay gelding.
 10 V. (£5).—G. LEDSON, Manor House, Bromborough, Cheshire, for Pioneer, bay gelding.

Class D.—*Champion Class. Mares or Geldings* [19 entries.]

- 1 I. (£25).—F. VOLLER GRANGE, Alvaston, Nantwich, for Rufus, chestnut gelding.
 7 II. (£15).—T. & H. WARD, Pinchinthorpe, Great Ayton, Yorks, for Fisherman, bay gelding.
 16 III. (£10).—F. W. FOSTER, Marsh Farm, Etwell, Derby, for Paddy, bay gelding.
 19 IV. (£5).—G. LEDSON, Manor House, Bromborough, Cheshire, for Pioneer, bay gelding.
 14 V. (£5).—F. W. FOSTER, Marsh Farm, Etwell, Derby, for Snowball, grey gelding.

CATTLE.

Shorthorns.¹

Class 83.—*Shorthorn Bulls, calved in 1905, 1906, or 1907.*

[26 entries, 4 absent.]

- 710 I. (£10, & R. N. for Champion.²)—J. DEANE WILLIS, Bapton Manor, Godford St. Mary, Wilts., for Alnwick Favourite 90853, roan, born Aug. 16, 1905, bred by the Duke of Northumberland, K.G., Alnwick Castle; s. Bapton Favourite 76080, d. Baroness Rothschild by Baron Abbotsford 76087.
 690 II. (£6).—SIR RICHARD COOPER, Br. Shenstone Court, Lichfield, for Silver Mint 2nd 100853, red and little white, born April 8, 1907, bred by Walter Hazell, Walton Grange, Aylesbury; s. Silver Mint 79868, d. Makepeace 10th by Hercules 54124.
 699 III. (£4).—F. MILLER, La Belen, Clifton Road, Birkenhead, for Good Friday 99005, roan, born March 29, 1907, bred by J. Hope, Ireby Hall, Wigton; s. Morning Sun 88384, d. Tulip 5th by Oxtorus 79512.
 696 IV. (£3).—GEORGE HARRISON, Gainsford Hall, Darlington, for Mintmaster 96107, roan, born March 27, 1906, bred by John Marr, Uppermill, Turves; s. Violet Royal 90424, d. Maud 45th by Bapton Diamond 78289.
 694 V. (£3).—JOHN GILL, Thorn Farm, Staunton, Penrith, for Uxor Prince 100938, white, born Dec. 12, 1906, bred by John Annandale & Sons, Lintford Rowlands Gill, Co. Durham; s. Tarrol Uxor 90622, d. Snowball by Pithive Pride 79568.
 687 R. N. & H. C.—GEORGE CAMPBELL, Harthill, Keig, Whitehouse, Aberdeenshire, for Knight of Malta.

Class 84.—*Shorthorn Bulls, calved on or between January 1, 1908, and March 31, 1908.* [15 entries, 2 absent.]

- 716 I. (£10).—GEORGE HARRISON, Gainsford Hall, Darlington, for Collynie Prince 101833, roan, born March 10, bred by W. Duthie, Collynie, Turves; s. Vanguard 97621 d. Collynie Princess 7th by Royal Edward 82151.
 721 II. (£6).—EARL MANVERS, Holme Pierrepont, Nottingham, for Notlaw Phoenix 103227, red, born Jan. 17, bred by Dr. Vaughan Harley, Walton Hall, Blakeney; s. Broad Arrow 88048, d. Persis 5th by Franciscan 70711.
 717 III. (£4).—GEORGE HARRISON, for Prince Olaf 2nd 103110, roan, born March 5, bred by R. W. Bell, Windmill Farm, Congh, Ireland; s. Prince Olaf 60 35, d. Broadbrook F. 3rd by Lord Roberts 83058.
 718 IV. (£3).—CHARLES A. HIRST, Crake Hall, West Heslerton, York, for Dunglass Gallant 103111, roan, born March 29, bred by W. & J. W. Peterkin, Dunglass, (Donon Bridge; s. Royal Hope 98913, d. Lady Gordon 8th by Collynie Conqueror 78600).
 724 R. N. & H. C.—VISCOUNT TREDEGAR, Tredegar Park, Newmarket, Mon., for Pretender.

Class 85.—*Shorthorn Bulls, calved on or between April 1, 1908, and December 31, 1908.* [31 entries, 1 absent.]

- 746 I. (£10, Champion,² & Cup.³)—EARL MANVERS, Holme Pierrepont, near Nottingham, for Duke of Kingston 2nd 102088, roan, born Aug. 8; s. King Christian of Denmark 86316 d. Bella Grant by Count Nicholas 78435.

¹ £160 towards these Prizes were given by the Shorthorn Society.

² Champion Prize of £20 given by the Shorthorn Society for the best Bull in Classes 83-87 and 96.

³ The Royal Lancashire Society's "Derby" Challenge Cup, value £50, for the best Bull bred by Exhibitor in Classes 83-87 and 96.

Award of Live Stock Prizes at Liverpool, 1910. lxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 748 II. (£20.) LORD MIDDLETON, Birdsall, York, for *Birdsall Cresus* 101558, roan, born April 20; s. illustrious Count 9633, d. Cambridge Waterloo 1th by Solid Gold 87418.
 753 III. (£1.) GEORGE CAMPBELL, Harthill, Ke F., Whitehouse, Aberdeenshire, for *Pride of Fiddich* 13448, roan, born April 25, bred by James McWilliam, Garbity Oron Station; s. Pride of Avon 8068, d. Sunbeam 8th by Pride of Fame 73238.
 758 IV. (£3.) EDWARD S. GODSALL, Salmon & Sons, Brewery, Stroud, for *Salmon's Champion* 104800, red, born April 13; s. Rosette 90837, d. Binstead Carolina Duchess by Lincolns 9039.
 745 V. (£3.) H. S. LEON, Bletchley Park, Bucks., for *Bletchley Silver* 101570, roan, born Sept. 20; s. Silver Mint 79008, d. Mistletoe 34th by Bapton Champion 78285.
 737 R. N. & H. O. HENRY DUDDING, Riby Grove, Great Grimshy, for *Allerston Nugget*.

Class 86. Shorthorn Bulls, calved on or between January 1, 1909, and March 31, 1909. [43 entries, 5 absent.]

- 771 I. (£10.) W. T. GARNE & SON, Aldaworth, Northleach, Glos., for *Village Phantom* 107382, red roan, born March 5; s. Village Beau 87631, d. White Phantom by Wrestler 80582.
 788 II. (£6.) DON MACLENNAN, Radnor Hall, Elstree, Herts., for *Strowan Archduke* 2nd 107 07, roan, born Feb. 5, bred by Capt. C. H. Graham Stirling, Strowan, Grief; s. Strowan Regent 97317, d. Bearstone (Oxford York 2nd by Charming Star 76333.
 790 III. (£4.) LORD MIDDLETON, Birdsall, York, for *Birdsall Brilliant* 104765, roan, born Jan. 15; s. Birdsall Brewer 90614, d. Victoria Waterloo by Brandaby's Victor 70211.
 760 IV. (£2.) W. T. GARNE & SON, for *Village Gift* 107376, roan, born Jan. 4; s. Village Beau 87631, d. Red Penny by Bapton Crown 78288.
 768 V. (£3.) W. T. GARNE & SON, for *Royal Crest* 100889, dark roan, born Jan. 15; s. Village Crest 100880, d. Princess Royal 8th by Bapton Favourite 78080.
 792 R. N. & H. O. F. MILLER, La Belon, Clifton Road, Birkenhead, for *Prospector*.
 780 Special. J. H. MADEN, Rockcliffe House, Bacup, for *Rockcliffe Scotchman*.
 760 R. N. for Special. T. ATKINSON, Redvales Farm, Bury, for *Fota Beethoven*.

Class 87. Shorthorn Bulls, calved on or between April 1, 1909, and December 31, 1909. [42 entries, 4 absent.]

- 812 I. (£10.) WALTER M. SCOTT, Nether Swell Manor, How-on-the-Wold, for *Primrose Star* 100535, white, born April 1, bred by William Duthie, Gollynne, Tarves; s. Golden Primrose 98870, d. Gollynne Fancy by Scottish Fancy 76801.
 836 II. (£8.) LORD MIDDLETON, Birdsall, York, for *Birdsall Claudius* 104804, roan, born May 25; s. illustrious Count 95637, d. Melton Victoria 2nd by Kewer King 76083.
 833 III. (£4.) EARL MANVERS, Holme Pierrepont, near Nottingham, for *Duke of Woodthorpe* 103363, roan, born April 20, bred by T. Potter, Daybrook House, Nottingham; s. Golden Beau 96300, d. Woodthorpe Rose 4th by Playfellow 84327.
 825 IV. (£3.) CHARLES A. HIRST, Orke Hall, West Heslerton, York, for *Columbus*, roan, born May 3, bred by William Anderson, Saphock, Old Meldrum; s. Proud Emblem 100000, d. Columbine 12th by Villager 80177.
 817 V. (£3.) JOHN GILL, Thorn Farm, Stanton, Pembrith, for *Collynie Golden Star* 105070, red, born April 7, bred by William Duthie, Gollynne, Tarves; s. Golden Primrose 98870, d. Bannister Pride 4th by Royal Star 71502.
 808 R. N. & H. O. RICHARD CORNELIUS, Bankfields, Eastham, for *Eastham Beau*.
 821 Cup. JOHN HARRISON, Moss House, Hoots, Preston, for *Lord Brilliance*.
 816 R. N. for Cup. A. A. GATTY, Bannister Hall, near Preston, for *Bannister Pride*.

Class 88. Group Class, for the best collection of either three or four Shorthorn Bulls, bred by Exhibitor. Open to animals entered in Classes 83 to 87 and 90 only. [6 entries, none absent.]

- 768, 769, 770 & 771 I. (£15.) W. T. GARNE & SON, Aldaworth, Northleach, Glos., for *Royal Crest, Village Gift, Village Knight, and Village Phantom*.
 748, 760, 835 & 836 II. (£10.) LORD MIDDLETON, Birdsall, York, for *Birdsall Cresus, Birdsall Brilliant, Birdsall Cavalier, and Birdsall Claudius*.

Class 89. Shorthorn Cows (in-milk), calved in or before 1906.

[14 entries, 4 absent.]

- 853 I. (£10.) JOHN H. MADEN, Rockcliffe House, Bacup, for *Magic Princess* (vol. 55, p. 1070), roan, born Jan. 15, 1902, calved Nov. 18, 1909, bred by T. Richardson, The Wreny, Wigton; s. Edward 15th 78978, d. Magic Queen by Magic Wrestler.

Special Prize of £10 given by the Shorthorn Society for the best Bull in Classes 86, 87, and 88, the property of an Exhibitor residing in Lancashire.

The Royal Lancashire Society's "Gatty" Challenge Cup, value Twenty-five Guineas, for the best Bull in Classes 87 and 88, not exceeding twelve months old, bred by an Exhibitor resident in the County of Lancaster.

lxiv . *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 881 II. (£6).—GEORGE HARRISON, Gainford Hall, Darlington, for *Elvetham Ruth* (vol. 53, p. 617), roan, born Feb. 8, 1908, calved Jan. 1, 1910, bred by Lord Calthorpe, Elvetham Park, Winchfield; s. *Elvetham Monarch* 88613, d. *Rosina* by Bapton Lavender 71073.
- 878 III. (£4).—JOSHUA A. WILLIAMS, Moor Park, Harrogate, for *Ratcheugh Beauty* (vol. 55, p. 498), roan, born Dec. 29, 1904, calved Feb. 4, 1910, bred by William Bell, Ratcheugh Alnwick; s. *Baron Skeaborn* 87915, d. *Ratcheugh Witch* by Baron Abbotford 70007.
- 884 IV. (£3).—SIR OSWALD MOSLEY, BT., Rolleston Hall, Burton-on-Trent, for *Rollaston Marathon 2nd* (vol. 53, p. 1007), red and little white, born March 23, 1906 calved Feb. 20, 1910; s. *Beauty's Pride* 78371, d. *Riverby Marathon Duchess* by Prince Horace 68058.
- 886 R. N. & H. C.—LORD POLWARTH, Merloun House, St. Rowells, for *Butter Scotch*.

Class 90.—*Shorthorn Heifers (in-milk), calved in 1907.* [12 entries, 3 absent.].

- 888 I. (£10, & R. N. for Champion.¹)—F. MILLER, La Belen, Clifton Road, Birkenhead for *Daisy a Queen* (vol. 54, p. 1300), white, born May 18, calved Nov. 8, 1900, bred by J. O. Toppin, Musgrave Hall, Skelton, Penrith; s. *Imperial Crown* 93028, d. *Daisy's Hope* by Lord George 72878.
- 881 II. (£6).—S. E. DEAN & SONS, Dowsby Hall, Bourne, for *Lady Tarves 11th*, roan, born Dec. 20, calved Feb. 10, 1910, bred by F. Simmers, Whiteside, Alford; s. *Bounty* 90988, d. *Lady Tarves 7th* (vol. 52, p. 109) by Scottish Victor 69557.
- 870 III. (£4).—JOHN C. TOPPIN, Musgrave Hall, Skelton, Penrith, for *Warrior's Maid* (vol. 54, p. 1201), roan, born Jan. 25, calved Feb. 8, 1910; s. *Moonstone* 88602, d. *Warrior's Rose* by Riby Bean 70744.
- 869 IV. (£3).—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop, for *Tehidy Royal Carnation 7th* (vol. 54, p. 502), white, born April 3, calved April 1, 1910, bred by Arthur F. Barnett, Tehidy, Camborne; s. *Royal Estate* 88925, d. *Carnation 26th* by Treforrest 68462.
- 880 R. N. & H. C.—SIR MAURICE BROMLEY-WILSON, BT., Dallam Tower, Milnthorpe, for *Tyneside Daisy*.

Class 91.—*Shorthorn Heifers, calved on or between January 1, 1908, and March 31, 1908.* [11 entries, 1 absent.]

- 877 I. (£10, Champion.¹ & Cup.²)—LORD SHERBORNE, Sherborne Park, Northleach, for *Sherborne Fairy*, roan born Jan. 13; s. *Scottish Monarch* 77828, d. *White Fairy* (vol. 53, p. 1188) by *Fortune* 70487.
- 880 II. (£6, & R. N. for Cup.²)—J. DEANE WILLIS, Bapton Manor, Codford St. Mary, Wilts., for *Fairy Princess* (vol. 55, p. 1257), roan, born Feb. 9; s. *Prince of the Blood* 96532, d. *Fairy Queen 17th* by *Ivanhoe* 70109.
- 881 III. (£4).—J. DEANE WILLIS, for *Signorinetta*, roan, born Jan. 29; s. *Brave Roy* 76212, d. *Silene* (vol. 50, p. 1003) by *Silver Plate* 75633.
- 873 IV. (£3).—S. E. DEAN & SONS, Dowsby Hall, Bourne, for *Queen J. 31st*, roan, born March 25, bred by William James, Barteliver, Grampound Road; s. *January 5th* 88779, d. *Queen J. 1st* by Van Hampton 75804.
- 874 R. N. & H. C.—C. W. KELLOCK, Highfields, Audlem, Cheshire, for *Little Mary*.

Class 92.—*Shorthorn Heifers, calved on or between April 1, 1908, and December 31, 1908.* [19 entries, none absent.]

- 886 I. (£10).—S. E. DEAN & SONS, Dowsby Hall, Bourne, for *Florie* (vol. 55, p. 727), roan, born May 17, bred by A. T. Gorton, Combcauseway, Ince; s. *Royal Velvet* 84856, d. *Fantare 8th* by *Walcot* 78101.
- 884 II. (£6).—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield, for *Waterloo Lady 36th* (vol. 55, p. 599), roan, born April 26; s. *Meteor* 88631, d. *Waterloo Lady 10th* by *Ozarewitch* 68438.
- 886 III. (£4).—RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for *Rosalind 10th* (vol. 55, p. 872), roan, born April 1, bred by William Duthie, Collynie, Turves; s. *Achille* 93882, d. *Lady Rosalind* by *Onedon Chief* 74163.
- 887 IV. (£3).—S. E. DEAN & SONS, for *Riby Gwynne 28th* (vol. 55, p. 802), roan, born June 28, bred by Henry Dudding, Riby Grove, Great Grimsby; s. *Strowan Kaiser* 97846, d. *Riby Gwynne 21th* by *Horatio* 75471.
- 895 V. (£3).—SIR OSWALD MOSLEY, BT., Rolleston Hall, Burton-on-Trent, for *Rollaston Marathon 3rd* (vol. 55, p. 1045), white, born May 5; s. *Beauty's Pride* 78371, d. *Riverby Marathon Duchess* by Prince Horace 68058.
- 889 R. N. & H. C.—JOHN C. TOPPIN, Musgrave Hall, Skelton, for *Blotchley Queen*.

¹ Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 89-94 and 97-99.

² The Royal Lancashire Society's "Derby" Challenge Cup, value £50, for the best Cow or Heifer in Classes 89-94 and 97-99.

Award of Live Stock Prizes at Liverpool, 1910. lxx¹

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 93. *Shorthorn Heifers, calved on or between January 1, 1909, and March 31, 1909.* [21 entries, 1 absent.]

- 918 I. (10.) ¹ M. MITCHELL, La Belen, Clifton Road, Birkenhead, for *Augusta 125th*, roan, born Feb. 27, bred by George Bell, Moneymore, Co. Londonderry; s. Golden Elm 188462 d. *Augusta 112th* (vol. 55, p. 195) by Tilly 84017.
 921 II. (18.) J. DEANE WILLIS, Bapton Manor, Codford St. Mary, Wilts, for *Jacqueline*, roan, born Jan. 12; s. Bapton Mischel 97916, d. Joan (vol. 53, p. 126) by Bapton Jester.
 907 III. (21.) S. E. DEAN & SONS, Dowsby Hall, Bourne, for *Lady Ann 22nd*, roan, born March, bred by W. & J. W. Peterkin, Dungslass, Conon Bridge; s. Jim Sidey 99290 d. *Lady Ann 14th* (vol. 55, p. 1021) by Collynie Conqueror 78909.
 914 IV. (23.) CAPT. W. B. HARRISON, Aldershaw, Lichfield, for *Aldershaw Duchess*, roan, born Feb. 22; s. Royming Minstrel 98853, d. Butterfly Duchess 17th (vol. 53, p. 121) by Prince Leopold 77485.
 916 V. (23.) CHARLES W. KELLOCK, Highfields, Audlem, for *Highfields Parsley*, red, born Feb. 1, s. Violet Prince 101003, d. Olive Parsley 3rd (vol. 53, p. 1281) by Alstone Luk 84146.
 915 E. N. & H. O. W. J. HOSKEN, Pulsack, Hayle, for *Hayle Carnation 3rd*.

Class 94. *Shorthorn Heifers, calved on or between April 1, 1909, and December 31, 1909.* [36 entries, 2 absent.]

- 928 I. (10.) RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for *Eastham Belle*, white, born April 7, bred by W. T. Charne & Son, Aldworth, Northleach; s. Village Beau 87091, d. A. d. Phantom (vol. 55, p. 715) by Aldworth Jasper 85147.
 926 II. (16.) J. A. OLIVE BEHRENS, Swinton Grange, Malton, for *Abbey Farm Mary*, roan, born July 24, bred by J. & H. P. Webster, Abbey Farm, Yedingham, Yorks.; s. Border Tower 90660, d. Allerston Mary 3rd (vol. 55, p. 791) by Brockenburn 85198.
 930 III. (21.) SYDNEY DENNIS Linton, Cricklade, for *Linton Duchess 5th*, roan, born April 20; s. Village Diamond 100081, d. Rotherfield Duchess (vol. 53, p. 688) by Rotherfield Augustus 77062.
 952 IV. (23.) T. F. HOSKING, Trehidy Barton, Camborne, Cornwall, for *Camelia*, roan, born May 27; s. Fascinator 98810, d. Convolvulus (vol. 53, p. 1067) by Sherborne Count 81647.
 938 V. (23.) CHARLES A. HUNT, Crake Hall, West Heslerton, York, for *Allerston Margold 3rd*, roan, born April 28; s. Border Tower 90660, d. Margold 47th (vol. 54, p. 709) by Royal Charter 81585.
 929 E. N. & H. O. S. E. DEAN & SONS, Dowsby Hall, Bourne, for *Diamond Hope*.

Class 95. *Group Class, for the best collection of either three or four Shorthorn Cows, or Heifers, bred by Exhibitor. Open to animals entered in Classes 89 to 91 and 97 to 99 only.* [7 entries, none absent.]

- 880, 881 & 821 I. (15, & Cup.) J. DEANE WILLIS, Bapton Manor, Codford St. Mary, Wilts, for *Fairy Princess, Signorinetta, and Jacqueline*.
 911, 912 & 933 II. (10.) SIR WALPOLE GREENWELL, Bt., Marden Park, Woldingham, Surrey, for *Marden Lady Waterloo, Marden Rowena, and Marden Crest 2nd*.
 890, 891 & 936 E. N. & H. O. GEORGE HARRISON, Gainford Hall, Darlington, for *Gainford Fairy, Ruth of Gainford, and Gainford Dickson*.

Class 96. *Shorthorn Bulls, calved in 1909.* [14 entries, 1 absent.]

- 970 I. (10.) J. M. SPRICKLAND, Warren House, Brandsby, Knaresborough, for *Brandsby's Coming Star*, red, born March 2; s. Regal Broadboks 100203, d. Brandsby Princess (vol. 56, p. 1171) by Bapton Jester 82708.
 961 II. (16.) EDWARD M. COOPER, Salmon's Spring Brewery, Stroud, for *Salmon's Dreadnought 100071*, red and white, born April 13; s. Aldbro' Scottish Prince 97800, d. Pedon by Royal Mahrour 74049.
 971 III. (21.) HENRY J. M. TORY, Damory Court, Blandford, for *Damory Banner 2nd*, roan, born July 7; s. Bright Silver 91010, d. Damory Patchwork (vol. 53, p. 1268) by Now or Never 67544.
 960 IV. (23.) J. A. ATTWATER, Dry Lease, Cirencester, for *Solomon*, red, born April 2; s. Lord Blanche 15th 92382, d. Crocus (vol. 55, p. 468) by Earl of Torwood 27th 78780.
 967 E. N. & H. O. SAMUEL SANDAY, Puddington Hall, Chester, for *Oxford Record*.

¹ The Royal Lancashire Society's "Millennium" Silver Challenge Cup, value Fifty Guineas, for the best Group of not less than three Female Shorthorns, bred by Exhibitor, in Classes 89-91 and 97-99.

² The dams of all bulls entered in Class 96 must have been mentioned in the award list or received a Certificate of Merit in a milking trial or test or in classes set apart for pedigree Dairy Shorthorns, since the standard quantity of milk has been the necessary qualification.

³ Prizes given by the Dairy Shorthorn (Coates's Herd Book) Association.

lxvi Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 97.—Shorthorn Dairy Cows (in-milk), calved in or before 1905.

[32 entries, 10 absent.]

- 1001 I. (£10, R. N. for Champion,¹ & R. N. for Cup.²) J. M. STRICKLAND, Warren House Brandsby, Easingwold, for Brandsby's Princess (vol. 53, p. 1171), red, born Feb. 18, 1903, calved May 23, 1910; s. Bapton Judge 82708, d. Princess May by Coming Star 57082.
- 974 II. (£6.)—C. R. W. ADEANE, Babraham Hall, Cambridge, for Victorious Seraphine (vol. 55, p. 531), red, born June 14, 1906, calved April 27, 1910, bred by R. & J. Treadwell, Aytwell Castle, Brackley; s. Neat Go 96186, d. Spice Seraphina by Royal Baron 82131.
- 976 III. (£4.)—W. BATEMAN, Beaumont Grange, Hulton, Lancaster, for Empress (vol. 55, p. 480), white, born Feb. 6, 1903, calved June 5, 1910; s. Warlock 83030, d. Graciel by Bold Briton 80390.
- 984 IV. (£3.)—SAMUEL SAN AY, Puddington Hall, Chester, for Darlington Cranford 10th, red roan, born April 18, 1902, calved May 31, 1910, bred by George Taylor, Cranford, Middlesex; s. Wild Prince 9th 78170, d. Darling (vol. 48, p. 867) by Lord Somerset Furbelow 63853.
- 981 V. (£3.)—W. M. CAZALET, Fairlawn, Tonbridge, for Queen Anne (vol. 52, p. 800), roan, born May 13, 1901, calved June 2, 1910, bred by Mrs. L. H. Holland, Warton Grange, Newport; s. Pioneer 78553, d. Imperial Josephine by Prince Imperial 2nd 71234.
- 998 R. N. & H. C.—J. W. SANDERS, Gilmorton, Lutterworth, for Tricksey 16th 959, 974, 1017 (Cup.³) C. R. W. ADEANE, for Babraham Mosstrooper, Victorious Seraphine, and Babraham Moss Rose.
- 996, 1011, 1030 (R. N. for Cup.⁴) LORD ROTHSCHILD, for Gay Boy, Cherry Blossom, and Primrose Foggathorpe 11th.

Class 98.—Shorthorn Dairy Cows (in-milk), calved in 1906.

[13 entries, 4 absent.]

- 1008 I. (£10, Champion,¹ & Cup.²)—EDWARD S. GOLDSMILL, Salmon's Spring Brewery, Stroud, for Darlington Cranford 21st (vol. 53, p. 1253), roan, born April 28, calved May 7, 1910, bred by George Taylor, Cranford, Middlesex; s. Sir Barrington 6th 78612, d. Darling 4th by Duke of Cumberland 1st 73305.
- 1011 II. (£6.)—LORD ROTHSCHILD, Tring Park, Hert's, for Cherry Blossom (vol. 53, p. 1183), roan, born April 13, calved May 3, 1910; s. Rodney 89858, d. Cherry Bipe by Golden Cherry's Prince 70321.
- 1015 III. (£4.)—J. W. SANDERS, Gilmorton, Lutterworth, for Nelly Lee 25th (vol. 53, p. 1178), red and little white, born Aug. 20, calved April 21, 1910; s. Prince Softlaw 2nd 86905, d. Nelly Lee 15th by Duke of Warlaby 72426.
- 1016 R. N. & H. C.—CHARLES E. WOODHOUSE, Woolmers, near Hertford, for Violet 10th.

Class 99.—Shorthorn Dairy Heifers (in-milk), calved in or after 1907.

[19 entries, 1 absent.]

- 1017 I. (£10⁴)—C. R. W. ADEANE, Babraham Hall, Cambridge, for Babraham Moss Rose (vol. 54, p. 456), white, born April 23, 1907, calved April 17, 1910; s. Border Brilliant 90062, d. Moss Rose 2nd by Viscount Barrington 3rd 7381.
- 1018 II. (£6.)—C. R. W. ADEANE, for Babraham Pretty Coquette (vol. 51, p. 155), red and white, born April 7, 1907, calved May 1, 1910; s. Prince Pericles 24th 86053, d. Lady Coquette by Red Lord 15th 77403.
- 1030 III. (£4.)—LORD ROTHSCHILD, Tring Park, Hert's, for Primrose Foggathorpe 11th (vol. 55, p. 821), red and little white, born Sept. 18, 1901, calved April 20, 1910, bred by Tom Hunter, Dolphinlee Farm, Lancaster; s. Duke of Lancaster 91558, d. Primrose by Duke Fidget 78728.
- 1031 IV. (£3.)—LORD ROTHSCHILD, for Topsy (vol. 51, p. 100⁴), red and white, born May 30, 1907, calved May 2, 1910; s. Mauna Charta 77166, d. Tulp Leaf by St. Blaine 80521.
- 1034 R. N. & H. C.—J. TONG, The Shard Herd, Hamblaton, Poulton-le-Fylde, for Shard Snowflake 4th.

Class 100.—Milk Yield Prizes, open to Shorthorn Cows and Heifers entered in Classes 89, 90, 97, 98, and 99 only. [21 entries, 4 absent.]

- 989 I. (£10.) REUBEN SHILTON, Grange Farm, Ruddington, Nottingham, for Concordia 2nd (vol. 51, p. 647), roan, born July 1, 1903, calved May 21, 1910, bred by Alfred Hewlett, Haseley Manor, Warwick; s. Milverton Commander 2nd 8123, d. Constantia by Prince Charlie 75270.

¹ Champion Prize of £10 given by the Dairy Shorthorn (Conter's Herd Book) Association for the best Cow or Heifer in Classes 97-99.

² The Royal Lancashire Society's "Peck" Silver Challenge Cup for the best Dairy Cow in Classes 97-99 and 104-107.

³ Challenge Cup, value Fifty Guinea's, given through the Dairy Shorthorn (Conter's Herd Book) Association for the best Group of one Bull and two Cows or Heifers in Classes 98-99.

⁴ Prizes given by the Dairy Shorthorn (Conter's Herd Book) Association.

Award of Live Stock Prizes at Liverpool, 1910. lxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 979 II. (£6.) W. M. AZALLET, Fairlawn, Tonbridge, for **Amport Ursulina** (vol. 54, p. 121), red, born Nov. 3, 91, calved April 22, 1910, bred by the Marquis of Winchester, Amport Andover; s. **Stinton Monk** 81880, d. **Ursulina** 17th by **Reuten** 6th 7.
 972 III. (£4.) C. R. W. ADELAND, Braham Hall, Cambridge, for **Braham Eva Bates** (vol. 32, p. 419), red and white, born Sept. 3, 1903, calved April 20, 1910; s. **Prince Pericle** 24th 546, d. **Lady Evelyn Bates** by **Red Lord** 15th 7753.
 1001 E. N. & H. O. J. M. SPRICKLAND, for **Brandsby's Princess**.

Lincolnshire Red Shorthorns.¹

N.B. In the Lincolnshire Red Shorthorn Classes, the number inserted within brackets after the name of an animal indicates that the animal is entered in *Cotes's Herd Book*. A number without brackets indicates that the animal is registered in the *Lincolnshire Red Shorthorn Herd Book*.

Class 101. Lincolnshire Red Shorthorn Bulls, calved in 1904, 1905, 1906, or 1907. [6 entries, 1 absent.]

- 1011 I. (£10.) J. G. WILLIAMS, Pendley Manor, Tring, for **Grange Prince** 4843, born Jan. 30, 1906, bred by R. H. Girtwright, Keddington Grange, Louth; s. **Stenigot Bloom Boy** 3611, d. **Keddington Butterfly** 2nd by **Consholme Boy** 347.
 1039 II. (£8.) ROBERT CHATTERTON, Welbourn Hall, Lincoln, for **Red Chief** 3rd 4930, born April 10, 1905, bred by Farrow & Sons, Strubby, Alford; s. **Red Chief** 3611, d. **Withern Stenigot** by **Marshman** 180.
 1037 III. (£4.) AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, Surrey, for **King Louis** 5457, born Feb. 28, 1907, bred by S. Crawley, Hemington, Oundle; s. **King's Counsel** 3660, d. **Well Duchess** 1th by **Prince Louis** (81821).
 1010 E. N. & H. O. F. B. WILKINSON, for **Saltfleet Friar**.

Class 102. Lincolnshire Red Shorthorn Bulls, calved in 1908. [3 entries, 1 absent.]

- 1042 I. (£10.) ROBERT CHATTERTON, Welbourn Hall, Lincoln, for **Stenigot Comet** 2nd 7141, born June 4; s. **Keddington Comet** 3413, d. **Stenigot Choice** 3rd by **Commander** 80.
 1014 II. (£8.) CAPT. THE HON. HERALD B. PORTMAN, The Manor, Heading, Lincoln, for **Wentworth Earl** 7218, born July 3, bred by Earl Fitzwilliam Wentworth, Rotherham, Yorks.; s. **Cropwell Dainty** 4311, d. **Cropwell Pride** 1th by **Cropwell Red Earl** 28th.

Class 103. Lincolnshire Red Shorthorn Bulls, calved in 1909. [4 entries.]

- 1046 I. (£10.) JOHN EVENS, Burton, Lincoln, for **Kirmington Forester** 13th 4523, born Jan. 5, bred by George Morris, Kirmington, near Brocklesby; s. **Scampton Forester** 4567, d. **Keddington Pearl** by **Bibby** 310.
 1048 II. (£8.) F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Scampton King of the Valley** 7123, born April, bred by G. E. Sanders, Scampton House, Lincoln; s. **Bindon Grenadier** 4271, d. by **Grant Tim** of Lincoln 392.
 1045 III. (£4.) AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, Surrey, for **Bletchingley Brennus** 6585, born March 2, bred by Robert Chatterton, Stenigot, Lincoln; s. **Keddington Comet** 3413, d. **Stenigot Duchess** 3rd by **County Member** 83.
 1047 E. N. & H. O. C. HENRY NEWMAN, The Lodge Farm, Canwick, near Lincoln, for **Canwick Ruby**.

Class 104. Lincolnshire Red Shorthorn Cows (in-milk), calved in or before 1906. [11 entries, 1 absent.]

- 1082 I. (£10.) J. G. WILLIAMS, Pendley Manor, Tring, for **Pendley Pearl** (vol. 15, p. 351), born Jan. 7, 1906, calved June 1, 1910, bred by the late T. Bott, Benniworth, Lincoln; s. **Saltfleet Echo** 3638, d. **Benniworth Pearl** by **Saltfleet Actor** 1601.
 1053 II. (£8.) PERCY HENSMAN, Fulleby Grange, Horncastle, for **Keal Hilda** (vol. 13, p. 305), born April 13, 1906, calved Feb. 10, 1910, bred by Capt. R. M. Grantham, West Keal, Spaldy; s. **Scampton Excelsior** 4081, d. **Keal Red Daisy** by **Saltfleet John Bull** 1330.
 1050 III. (£4.) F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Doxington Crawley** (vol. 11, p. 180), born Oct. 1, 1906, calved May 2, 1910, bred by C. & J. Crawley, Hemington, Oundle; s. **Lord Chancellor** 10th 1800, d. **Red Belle** 2nd by **Baron Ormsby** 3rd 20.

- 1049 E. N. & H. O. AUGUSTUS P. BRANDT, for **Stenigot Bloom** 10th.

Class 105. Lincolnshire Red Shorthorn Heifers (in-milk), calved in 1907. [6 entries, none absent.]

- 1067 I. (£10.) J. G. WILLIAMS, Penley Manor, Tring, for **Pendley Skipworth** (vol. 15, p. 852), born March 3, calved May 8, 1910; s. **Keddington Baron** 4881, d. **Keddington Skipworth** 5th by **Benniworth** 4th 829.

¹ £30 towards these Prizes were given by the Lincolnshire Red Shorthorn Association.

lxviii Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1068 II. (£6.)—J. G. WILLIAMS, for *Pendley Starlight* (vol. 15, p. 752), born Jan. 7, calved March 1, 1910; s. *Keddington Baron* 4881, d. *Starlight* by *The Count* 1300.
 1065 III. (£4.)—PERRY HENSMAN, *Fulleyby Grange*, Horncastle, for *Fulleyby Tindall* 2nd, born March 25, calved Jan. 25, 1910; s. *Scampton Formula* 4662, d. *Fulleyby Tindall* O (vol. 13, p. 200) by *Poolham Scampton* 3rd 3013.
 1064 E. N. & H. C.—PERRY HENSMAN, for *Fulleyby Marvel* 2nd.

Class 106.—*Lincolnshire Red Shorthorn Heifers, calved in 1908*

[6 entries, none absent.]

- 1074 I. (£10.)—J. G. WILLIAMS, *Pendley Manor*, Tring, for *Pendley Starlight* 2nd, born March 10; s. *Keddington Comet* 3443, d. *Starlight* (vol. 13, p. 211) by *The Count* 1300.
 1073 II. (£6.)—J. G. WILLIAMS, for *Pendley Countess*, born March 11; s. *Keddington Comet* 3443, d. *Benniworth Farewell* 3rd (vol. 13, p. 210) by *Benniworth Actor* 2105.
 1071 III. (£4.)—F. B. WILKINSON, *Oavendish Lodge*, Edwinstowe, Newark, for *Benniworth Pink*, born Jan. 20, bred by O. F. Belt, *Benniworth*, Lincoln; s. *Somercoteley Bonus* 4577, d. by *Benniworth Actor* 2015.
 1069 E. N. & H. C.—AUGUSTUS P. BRANDT, for *Deeping Daisy* 3rd.

Class 107.—*Lincolnshire Red Shorthorn Heifers, calved in 1909.* [1 entries.]

- 1076 I. (£10.)—AUGUSTUS P. BRANDT, *Castle Hill*, Bletchingley, for *Bletchingley Bellona*, born April 18, bred by George Frear, *Deeping St Nicholas*, Spalding; s. *Buscot Rupert*, d. *Deeping Choice* 3rd by *Anderby Champion* 1751.
 1073 II. (£6.)—J. G. WILLIAMS, *Pendley Manor*, Tring, for *Pendley Violet* 1th born March 12; s. *Bonby Excursionist* 4th 5161, d. *Benniworth Violet* 2nd (vol. 13, p. 210) by *Falldfleet Actor* 1864.
 1077 III. (£4.)—CAPT. E. M. GRANTHAM, *The Rookery*, West Keal, Spalding, for *Keal Doris*, born April 16; s. *Rascal* 4937, d. *Keal Leonora* (vol. 13, p. 205) by *Conbaleum* 1831.
 1076 E. N. & H. C.—JOHN EVENS, *Burton*, Lincoln, for *Burton Fancy*.

Class 108.—*Milk Yield Prizes, open to Lincolnshire Red Shorthorn Cows and Heifers entered in Classes 104 and 105 only.*

[7 entries, none absent.]

- 1051 I. (£10.)—JOHN EVENS, *Burton*, Lincoln, for *Burton Fuchsia* 3rd (vol. 15, p. 200), born 1902, calved May 25, 1910, bred by the late W. R. Sharp, *Swinshead*, Boston; s. *Scampton Bloodstone* 2833.
 1050 II. (£6.)—JOHN EVENS, for *Burton Cork* 6th (vol. 14, p. 258), born March 30, 1905, calved April 24, 1910; s. *Burton Rex* 2131, d. *Burton Cork* 3rd by *Red Rover* (77618).
 1058 III. (£4.)—CHARLES E. SCORER, *Whitehall*, *Bracebridge Heath*, Lincoln, for *Panton* 206th, born 1901, calve May 1, 1910, bred by the late M. Turner, *Panton Hall*, Wragby; s. *Kirkby Champion* 1916 d. by *Elphie* III.
 1049 E. N. & H. C.—AUGUSTUS P. BRANDT, for *Stenigot Bloom* 10th.

Herefords.¹

Class 109.—*Hereford Bulls, calved in 1905, 1906, or 1907.*

[6 entries, none absent.]

- 1079 I. (£10, & Champion.)—GEORGE BUTTERS, *Hill House*, *Newton*, *Leominster* for *Sailor Prince* 26465, born Feb. 3, 1907, bred by W. T. Barnaby, *Salisbury Castle*, *Bromyard*; s. *Nelson* 21825, d. *Hapless Spark* by *Happy Hampton* 18007.
 1084 II. (£6, & E. N. for Champion.)—G. D. FARRER, C.B., M.P., *Rush Court*, *Wallingford*, for *Rob Roy* 24953, born Feb. 17, 1905, bred by William Tudge, *Summer Court*, *Kington*; s. *Commandant* 23010, d. *Golden Blossom* by *Goldbox* 15330.
 1083 III. (£4.)—SIR J. R. G. COTTERELL, Bt., *Garnons*, *Hereford*, for *Royal Ringer* 26168, born March 20, 1907, bred by W. Griffiths, *Alderswood*, *Tarrington*; s. *Chapin Ringer* 21478, d. *Britannia* by *Bruce* 18258.
 1080 E. N. & H. C.—PETER COATS, *Sheepcote*, *Clifford*, *Herefordshire*, for *Sunny Jim*.

Class 110.—*Hereford Bulls, calved in 1908.* [18 entries, 3 absent.]

- 1097 I. (£10.)—DE P. PENNEFATHER, *Upper Newton*, *Kinnerley*, *Wardley*, for *Ring-leader* 27176, born Feb. 9; s. *Pembroke Captain* 23014, d. *Ringlet* by *Baronet* 20166.
 1093 II. (£6.)—P. & G. HUGHES, *Grasty*, *Grews*, for *Andy* 28008, born Jan. 18, bred by G. A. Denny, *Lyford Court*, *Hereford*; s. *Rodney Stone* 18693, d. *Annette* by *Clarence*.
 1087 III. (£4.)—PETER COATS, *Sheepcote*, *Clifford*, *Herefordshire*, for *Provost* 21125, born Feb. 7; s. *Fusilier* 21402, d. *Douglas Poet* by *Endic Hero* 18837.
 1085 IV. (£3.)—GEORGE BUTTERS, *Hill House*, *Newton*, *Leominster*, for *Newton Victor* 27062, born March 11; s. *Newton Tumbler* 24813, d. *Mabel* 2nd by *Spencer* 20311.
 1086 E. N. & H. C.—PETER COATS, for *Dandy Boy*.

¹ £50 towards these Prizes were given by the Hereford Herd Book Society.

² Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 109-112.

Award of Live Stock Prizes at Liverpool, 1910. lxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 111. Hereford Bulls, calved in January or February, 1909.

[11 entries, 2 absent.]

- 1106 I. (F10.) THE EARL OF COVENTRY, Croome Court, Severn Stoke, for Dollymount 100 born Jan. 17; s. Challenger 20000, d. Dolly by Earl Marshal 22108.
- 1106 II. (F8.) W. GRIBBITHS, Aldersend, Tarrington, Hereford, for Frome Ringer 7505, born Jan. 19; s. Royal Ringer 26150, d. True Love by Ironmaster 17312.
- 1110 III. (F4.) S. C. HAYTER, Twyford, Pembroke, born Jan. 4; s. Niles (Int 25882, d. Dot (vol. 40, p. 465) by Buge Protector 21167.
- 1111 IV. (F3.) A. E. HUGHES, Wintercott, Leominster, for Maximus 27690, born Jan. 11; s. Ronald 26150, d. Margery by Pearl King 21192.
- 1112 R. N. & H. C. P. & G. HUGHES, Gresty, Crewe, for Silver.

Class 112. Hereford Bulls, calved in 1909, on or after March 1.

[6 entries, 1 absent.]

- 1120 I. (F10.) HENRY J. DENT, Perton Court, Stoke Edith, Herefordshire, for Perton Magnet 27761, born March 6; s. Macbeth 21596, d. Pink Rose 3rd by Ardcan 16518.
- 1118 II. (F6.) SIR J. R. G. COTTEBELL, BT., Garmons, Hereford, for Justice 27629, born March 5; s. Royal Ringer 26458, d. Julia by Whitfield Grove 21122.
- 1119 III. (F4.) SIR J. R. G. COTTEBELL, BT., for Royal Prince 27847, born March 22; s. Royal Ringer 26458, d. Primilla by Admiral 15814.
- 1121 R. N. & H. C. MRS. E. MEDLICOTT, Bodenham, for Bodenham Launcelot.

Class 113. Hereford Cows (in-milk), calved in or before 1906.

[6 entries, 2 absent.]

- 1128 I. (F10.) W. B. TUDOR, Stopasda, Onibury, Salop, for Noble Frolic (vol. 41, p. 802), born Feb. 15, 1906, calved March 13, 1910, bred by R. Bach, Onibury; s. Eaton Noble 24008, d. Ony Frolic by Ony-de-Beers 22428.
- 1125 II. (F8.) HENRY R. EVANS, Court of Noka, Staunton-on-Arrow, for Baroness (vol. 41, p. 324), born March 17, 1903, calved Feb. 26, 1910; s. British Protector 21219, d. Danison by Murat 18805.
- 1127 III. (F4.) G. LLOYD JONES, Henth Grange, Worcester, for Lucy Newdigate (vol. 41, p. 218), born May 5, 1901, calved Jan. 28, 1910, bred by W. T. Barneby, Saltmarshes Castle, Bromyard; s. Newdigate 18108, d. Lady Lucy by Hero 7707.
- 1124 R. N. & H. C. THE EARL OF COVENTRY, Croome Court, Severn Stoke, for Mistake.

Class 114. Hereford Heifers (in-milk), calved in 1907. [2 entries.]

- 1129 I. (F10. & Champion.) PETER COATS, Sheepcote, Clifford, Herefordshire, for Ladybird 2nd (vol. 41, p. 202), born Feb. 12, calved Nov. 7, 1909; s. Endale 21366, d. Ladybird by Buge Protector 21167.
- 1130 II. (F8.) D. A. THOMAS, M.P., Llanwern, Newport, Mon., for Irvington Bess (vol. 30, p. 266), born Jan. 1, calved Jan. 9, 1910, bred by Richard Bright, Irvingtonbury, Leominster; s. Marston 2844, d. Bright's Oyster Girl by Glencoe 17207.

Class 115. Hereford Heifers, calved in 1908. [9 entries, 1 absent.]

- 1131 I. (F10.) GEORGE BUTTERS, Hill House, Newton, Leominster, for Countess (vol. 40, p. 290), born Feb. 7; s. Newton Tumbler 24813, d. Prairie Snowdrop by Prairie Star 14497.
- 1133 II. (F6.) J. G. COOKE HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Queen (vol. 40, p. 324), born Jan. 22, bred by the late W. H. Cooke, The Green, Stanford Bridge; s. Gunbler 20635, d. Hawthornden by Ruler 16846.
- 1136 III. (F4.) MRS. R. MEDLICOTT, Bodenham, Herefordshire, for Catherine (vol. 40, p. 662), born Jan. 27; s. Locarno 20797, d. Kitty 11th by Gayman 18734.
- 1138 R. N. & H. C. D. A. THOMAS, M.P., Llanwern, Newport, Mon., for Bonnie Belle.

Class 116. Hereford Heifers, calved in 1909. [17 entries, 6 absent.]

- 1142 I. (F10. & R. N. for Champion.) J. G. COOKE HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Primula (vol. 41, p. 308), born Jan. 27; s. Shelsley 20480, d. Primrose by Kinnerley King 20116.
- 1111 II. (F6.) JOHN D. DOUGLAS EVANS, Ffrwdgrech, Brecon, for Ffrwdgrech Betty (vol. 41, p. 17), born Feb. 4; s. Llanore 26267, d. Bess by Lord Kitchener 22074.
- 1150 III. (F4.) MRS. R. MEDLICOTT, Bodenham, Herefordshire, for Blossom 3rd (vol. 41, p. 561), born March 28; s. Locarno 20797, d. Blossom 2nd by Lancer 21515.
- 1151 IV. (F8.) KENNETH W. MILNES, Beam House, Montford, Shrewsbury, for Gem's Ray (vol. 41, p. 671), born Feb. 7; s. Sir James 26489, d. Gemina by Goschen 17284.
- 1140 V. (F3.) FRANK BIBBY, Hardwicke Grange, Shrewsbury, for Mabel, born Jan. 9; s. Cubic Measure 26040, d. Sunnys Lass (vol. 29, p. 212) by Eminence 18822.
- 1146 R. N. & H. C. S. C. HAYTER, Twyford, Pembroke, for Eileen.

¹ Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 115-116.

lxx *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Devons.¹

Class 117. *Devon Bulls, calved in 1905, 1906, or 1907.* [2 entries, 1 absent.]

1158 I. (£10, & Champion.²)—SIR GILBERT A. H. WILKS, BT., Northmoor Dulverton, for Northmoor Royal 5873, born Feb. 18, 1906; s. Pound Mayor 1850, d. Hursley Fancy 51h 18088 by Dreadnought 4178.

Class 118.—*Devon Bulls, calved in 1908.* [2 entries, 1 absent.]

1159 I. (£10.)—THE HON. E. W. B. PORTMAN, Hestercombe, Taunton, for Filleigh Gay Boy 6344, born Nov. 28, bred by A. S. Browne, Buckland Filleigh, Highampton, Devon; s. Buckland County Boy 5170, d. Gratton Lass 4th 18853 by Midding 3184.

Class 119.—*Devon Bulls, calved in 1909.* [6 entries, 1 absent.]

1166 I. (£10, & R. N. for Champion.³)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, Somerset, for Pound Fearless 6844, born Jan. 7; s. Pound Lord Brassy 5th 5622, d. Pound Fancy 28th 21810 by Apollo 4700.

1164 II. (£6.)—THE HON. E. W. B. PORTMAN, Hestercombe, Taunton, for Hestercombe King 6760, born March 12; s. Day King 6041, d. Cothelstone Welcome 20712 by Duke of Park 4021.

1161 III. (£4.)—CHARLES MORRIS, Highfield Hall, St. Albans, for Highfield Noble 6780, born March 19; s. Pound Bellringer 5617, d. Graceful 16226 by John Brown 3902.

1163 R. N. & H. C.—THE HON. E. W. B. PORTMAN, for Hestercombe Castor.

Class 120.—*Devon Cows or Heifers (in-milk), calved in or before 1907.*

[6 entries, 2 absent.]

1171 I. (£10, & R. N. for Champion.³)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Pound Brassy 12th 21695, born March 24, 1906, calved Jan. 22, 1910; s. Royal Charter 4488, d. Brassy 6th 16212 by Harold 2nd 3126.

1167 II. (£6.)—CHARLES MORRIS, Highfield Hall, St. Albans, for Captain Brass 18108, born Oct. 1, 1901, calved Jan. 15, 1910, bred by A. Bowerman, Capton, Williton, Taunton; s. Harold 4th 3595, d. Brassy 17373 by Duke of Beccort 5th 3970.

1168 III. (£4.)—THE HON. E. W. B. PORTMAN, Hestercombe, Taunton, for Beauty 13th 19222, born April 28, 1902, calved May 20, 1910, bred by M. A. Beedel & Sons, Heather-ton Bradford, Taunton; s. Shamrock 4193, d. Beauty 8th 17314 by Lord Park 3915.

1169 R. N. & H. C.—THE HON. E. W. B. PORTMAN, for Pansy.

Class 121.—*Devon Heifers, calved in 1908.* [4 entries, 1 absent.]

1173 I. (£10, & Champion.³)—CHARLES MORRIS, Highfield Hall, St. Albans, for Capton Lily 22510, born June 3, bred by A. Bowerman, Capton, Williton, Taunton; s. King-leader 4484, d. Capton Brunette 20549 by Royal 1st 2nd of Pound 3807.

1175 II. (£6.)—THE HON. E. W. B. PORTMAN, Hestercombe, Taunton, for Hestercombe Fable 22659, born Feb. 3; s. Churn 5174, d. Famous 8th 18080 by Kent Day 3790.

1174 III. (£4.)—THE HON. E. W. B. PORTMAN, for Hestercombe Cherry 22951, born Jan. 10; s. Referee 5613, d. Hestercombe Charity 20900 by Chertam 1164.

Class 122.—*Devon Heifers, calved in 1909.* [1 entries, 2 absent.]

1177 I. (£10.)—THE HON. E. W. B. PORTMAN, Hestercombe, Taunton, for Hestercombe Belle 23790, born April 22; s. Renn Pilot 5697, d. Belinda 5th 17644 by Curly King 3802.

1179 II. (£6.)—THE HON. E. W. B. PORTMAN, for Hestercombe Tuberosa 23608, born, March 11; s. Omar 5171, d. Tulip 2nd 21139 by Lord Fitzworthy 1140.

Class 123.—*Devon Dairy Cows (in-milk) calved in or before 1907.*

[5 entries, 1 absent.]

1184 I. (£10.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for Charmer 23097, born April 15, 1898, calved March 30, 1910, bred by T. S. Stevens, Littlewindar, Bramminster, Dorset; s. Chitronie Pretty boy 3308, d. Charmer by Doctor Primrose 2573.

1182 II. (£6.)—GODFREY J. B. CHETWYND, Wyndthorpe, Dorchester, for Magnet 18711, born Nov. 12, 1901, calved April 12, 1910, bred by J. W. Chick, Stratton, Dorchester; s. Drummer 3716, d. Brunette 11800 by Lord Dorchester 2435.

1181 III. (£4.)—GODFREY J. B. CHETWYND, for Compton Lovely 21878, born Feb. 5, 1904, calved April 25, 1910, bred by the late John Chick, Compton Valence, Dorchester; s. Compton Jupiter 4049, d. Compton Lotty 19333 by Compton Masher 4366.

1185 R. N. & H. C.—WILLIAM D. CHICK, Compton Valence, Dorchester, for Compton Moss 2nd.

¹ £50 towards these Prizes were given by the Devon Cattle Breeders' Society.
² Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bull in Classes 117-119.
³ Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 120-123.

Award of Live Stock Prizes at Liverpool, 1910. lxxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 124 *Milk yield Prizes, open to Devon Cows and Heifers entered in Classes 120 and 123 only* [6 entries, 1 absent.]

- 1182 I. (£10.) GODFREY J. B. CHITTYND, for **Magnet**. (See Class 123.)
 1181 II. (£5.) JOHN H. CHICK, for **Charmor**. (See Class 123.)
 1181 III. (£4.) GODFREY J. B. CHITTYND, for **Compton Lovely**. (See Class 123.)

South Devons.*

Class 125. *South Devon Bulls, calved in 1905, 1906, 1907, or 1908.*
 [5 entries, none absent.]

- 1187 I. (£10. & Champion.) H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, for **Elector** 2351, born Jan. 25, 1905, bred by H. Fairweather, Malton, Kingsbridge, for **High House Champion** 1888, d. **Milkmaid** 2nd 4576 by **Brum** 709.
 1188 II. (£8.) JOHN LUSCOMBE, Garswell, Ughborough, South Devon, for **Spridlescombe Favourite** 2507, born Sept. 30, 1905, bred by G. N. Harris, Spridlescombe, Modbury; s. **Last of Jacks** 2027, d. **Blossom** 1th 1931 by **Duke of Devon** 1129.
 1190 R. N. & H. C. W. & H. WHITLEY, Primley Farm, Paignton, for **Primley Archduke**.

Class 126.—*South Devon Bulls, calved in 1909.* [4 entries, none absent.]

- 1193 I. (£10. & R. N. for Champion.)—W. P. VOSPER, Merafield, Plympton, for **Merafield Pig** 349, born Jan. 21; s. **Henry** 1st 290, d. **Laura** 5076 by **Drummer** 975.
 1191 II. (£8.) BUTLAND BROS., Leigham, Plympton, for **Leigham Favourite** 3170, born April 27; s. **Dandy's Duke** 2331, d. **Fancy** 2nd 5822 by **Leigham Champion** 1067.
 1192 R. N. & H. C. W. P. VOSPER, for **Merafield Honest John**.

Class 127 *South Devon Cows or Heifers (in-milk), calved in or before 1907.*
 [7 entries, 1 absent.]

- 1196 I. (£10.) BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for **Countess** 0010, born March 30, 1901, calved Feb. 15, 1910; s. **Masher** 760, d. **Dairymaid** 4th 4159 by **General Buller** 1138.
 1198 II. (£8.) W. P. VOSPER, Merafield, Plympton, for **Daisy** 0230, born Dec. 7, 1904, calved March 7, 1910; s. **Lord Roberts** 1328, d. **Snowdrop** 5th 1320 by **Prince Edward**.
 1200 R. N. & H. C. W. & H. WHITLEY, Primley Farm, Paignton, for **Handsome**.

Class 128. *South Devon Heifers, calved in 1908.* [3 entries.]

- 1202 I. (£10.) BUTLAND BROS., Leigham, Plympton, for **Handsome** 7th 8302, born Feb. 12; s. **Good Sort** 2378, d. **Handsome** 2nd 5821 by **Rent Payer** 1540.
 1203 II. (£8.) W. P. VOSPER, Merafield, Plympton, for **Alexandra** 2nd 8792, born Jan. 14; s. **Hardwicke** 2117, d. **Alexandra** 6119 by **Drummer** 975.
 1204 R. N. & H. C. W. P. VOSPER, for **Sitella**.

Class 129. *South Devon Heifers, calved in 1909.* [6 entries, none absent.]

- 1205 I. (£10.) BUTLAND BROS., Leigham, Plympton, for **Leigham Girl** 3rd 8967, born Feb. 23; s. **Good Sort** 2378, d. **Cherry** 2nd 4036, by **Prince Edward** 517.
 1207 II. (£8.)—BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for **Fidget** 5th 9261, born Jan. 1, bred by John Luscombe, Garswell, Ughborough, Ivybridge; s. **Challenger** 1823, d. **Fidget** 4th 0015 by **Silver King** 1751.
 1208 R. N. & H. C. W. P. VOSPER, Merafield, Plympton, for **Plympton Pauline**.

Class 130. *Milk Yield Prizes, open to South Devon Cows and Heifers entered in Class 127 only.* [6 entries, 1 absent.]

- 1197 I. (£10.) W. P. VOSPER, Merafield, Plympton, for **Cowslip** 5th 1091, born Feb. 28, 1901, calved March 18, 1910; s. **Prince Edward** 517, d. **Cowslip** 2nd 2686 by **Duke of Devon** 2nd 171.
 1201 II. (£8.) W. & H. WHITLEY, Primley Farm, Paignton, for **Fancy** 0046, born April 1, 1904, calved April 10, 1910; s. **Surprise** 1704, d. **Primrose** 4544 by **Marinton** 2nd 1833.
 1198 III. (£4.) W. P. VOSPER, for **Daisy**. (See Class 127.)
 1200 R. N. & H. C. W. & H. WHITLEY, Primley Farm, Paignton, for **Handsome**.

Longhorns.*

Class 131.—*Longhorn Bulls, calved in 1905, 1906, 1907, or 1908.*
 [3 entries.]

- 1211 I. (£10. & Champion.) LORD GERARD, Eastwell Park, Ashford, Kent, for **Eastwell Emperor** 502, dark brindle and white, born March 15, 1906; s. **Westmeath Squire** 436, d. **Black-eyed Susan** by **Kentworth** 317.

* £20 towards these Prizes were given by the South Devon Hard Book Society.

* Challenge Cup value £20, given by a member of the R.A.S.E. interested in the breed, for the best animal in Classes 125-129.

* £16 towards these Prizes were given by the Longhorn Cattle Society.

* Silver Challenge Cup, value £15, given through the Longhorn Cattle Society for the best animal in Classes 131-134.

lxxii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

1212 II. (£6.)—J. L. & O. RILEY, The Brainge, Putley, Ledbury, for **Putley Regent**, brindle and white, born July 21, 1908; s. Arden Conqueror 412, d. Ethel of Eastwell by Young Kenilworth 439.

1213 R. N. & H. C.—W. HANSON SALE, Atherstone, for **Putley Gay Lad**.

Class 132.—Longhorn Bulls, calved in 1909. [3 entries.]

1215 I. (£10.)—J. L. & O. RILEY, The Brainge, Putley, Ledbury, for **Waddon Friar**, plum brindle and white, born April 7, bred by F. J. Mayo, Finar Waddon, Dorchester; s. Narley's Conqueror 468, d. Lily by Waddon Lad 129.

1216 II. (£6.)—W. HANSON SALE, Atherstone, for **Arden Premier**, red and white, born Jan. 17; s. Eastwell Enterprise 504, d. Lady Emily by Young Bow Horn 138.

1214 R. N. & H. C.—LORD GERARD, Eastwell Park, Ashford, Kent, for **Eastwell Elegant**.

Class 133.—Longhorn Cows or Heifers (in-milk), calved in or before 1907.

[4 entries, none absent.]

1217 I. (£10.)—LORD GERARD, Eastwell Park, Ashford, Kent, for **Bentley Dido** (vol 5, p. 18), brindle and white, born Jan. 11, 1904, calved May 25, 1910, bred by Mrs. M. M. Cheape, Bentley Manor, Redditch; s. Bentley Wonder 373, d. Dido by Earl of Upton 11th 308.

1219 II. (£6.)—J. L. & O. RILEY, The Brainge, Putley, Ledbury, for **Putley Portia** (vol. 6, p. 22), red and white, born July 8, 1905, calved May 5, 1910, bred by John Riley, Putley Court, Ledbury; s. His Honour 386, d. Taverners No. 21 by Warwickshire Lad 369.

1220 R. N. & H. C.—W. HANSON SALE, Atherstone, for **Lady Panza**.

Class 134.—Longhorn Heifers, calved in 1908 or 1909. [6 entries none absent.]

1226 I. (£10, & R. N. for Champion.)—W. HANSON SALE, Atherstone, for **Arden Nora** 2nd, brindle red and white, born Jan. 19, 1908; s. Arden Conqueror 412, d. Arden Nora by Westmeath Squire 435.

1224 II. (£6.)—J. L. & O. RILEY, The Brainge, Putley, Ledbury, for **Putley Milkmaid**, red brindle and white born July 2, 1908; s. Putley Monarch 475, d. Lady Bentley by Bentley Wonder 373.

1225 R. N. & H. C.—W. HANSON SALE, for **Arden Fairy Queen**.

Class 135.—Milk Yield Prizes, open to Longhorn Cows and Heifers entered in Class 133 only. [3 entries, none absent.]

1220 I. (£10.)—W. HANSON SALE, Atherstone, for **Lady Panza** (vol. 4, p. 20), grizzle red and white, born Sept. 8, 1902, calved April 25, 1910; bred by J. H. Watson South Mosses, Lamplugh, Cumberland; s. Sancho Panza 395, d. Bow Horn of Upton by Earl of Upton 10th 307.

1219 II. (£6.)—J. L. & O. RILEY, for **Putley Portia**. (See Class 133.)

Sussex.²

Class 136.—Sussex Bulls, calved in 1905, 1906, 1907, or 1908.

[5 entries, 2 absent.]

1227 I. (£15.)—W. G. FLADGATE, Apsley, Thakeham, Pulborough, for **Apsley Liberty** 2138, born June 4, 1905; s. Drungewick Prebble 4th 1901, d. Libertine 7460 by La Hung Chang 1474.

1228 II. (£6, & Champion.)—THE HON. R. P. NEVILL, Birling Manor, Mundon, for **Birling Ralph** 2378, born Jan. 5, 1907; s. Paley Major 2050, d. Birling (daisy) 9806, by Birling Gold 1923.

1231 III. (£4, & R. N. for Champion.)—WILLIAM A. THORNTON, Lock, Partridge Green, Sussex, for **Prince of Lock** 2nd 2490, born Jan. 6, 1908; s. Tusham Toreador 2018, d. Penshurst Heddies 8540 by Young Benares 1702.

Class 137.—Sussex Bulls, calved in 1909. [4 entries, 1 absent.]

1233 I. (£15.)—JAMES BUCHANAN, Lavington Park, Petworth, for **Lavington Gold** 7th, born Jan. 2; s. Shillingee Gold 2nd 2194, d. Gaiety Girl 10th 10511 by Binston 1081.

1234 II. (£6.)—W. G. FLADGATE, Apsley, Thakeham, Pulborough, for bull, born June 3; s. Albert 2nd 2053, d. Apsley Daisy 9834 by Ruchester Twin 1928.

1233 III. (£4.)—JOHN AUNGIER, Lynwick, Rudgwick, for **Lynwick Albert** 2nd, born Feb. 22; s. Albert 2nd 2053, d. Circus Girl 7583 by Cent per Cent 1413.

¹ Silver Challenge Cup, value £15, given through the Longhorn Cattle Society for the best animal in Classes 131-134.

² £25 towards these Prizes were given by the Sussex Herd Book Society.

³ Champion Silver Medal given by the Sussex Herd Book Society for the best Bull calved in 1907, 1908, or 1909 in Classes 136 and 137.

Award of Live Stock Prizes at Liverpool, 1910. lxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 138. *Sussex (cows or Heifers (in-milk), calved in or before 1907.* [1 entries, 2 absent.]

- 1237 I. (£15, & Champion.) - W. G. FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Fairy 10767, born Jan. 10, 1906, calved Jan 12; s Silver King 2023, d. Fairy 8818 by Drungewick Prebble 2nd 1877.
1238 II. (£6) - CAMPBELL NEWINGTON Onkover, Trethurst, Sussex for Sweet Pea 10th 9122, born June 8, 1903 calved Jan 17, 1910, bred by the late Earl Winterlon, Shillingale Park, Petworth, s President 1911, d Sweet Pea 1th 7810 by Brantidge Duke 1108.

Class 139. - *Sussex Heifers, calved in 1908.* [5 entries, none absent.]

- 1240 I. (£15, & R. N. for Champion.) - W. G. FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Cranberry 11801, born Jan. 17; s Shillingale Gold 5th 2377, d. Cranberry 8822 by Drungewick Prebble 2d 1877
1243 II. (£6) WILLIAM A. THORNTON, Lock, Pirbright Green, for Molly of Lock 4th 12125, born Feb. 31; s Tutsham Torador 2016, d. Mayfield Molly 6th 8146 by Rickwood Lad 1th 1851
1241 III. (£4) - THE HON. R. P. NEVILL, Birling Manor, Midhurst, for Birling Honor 12042, born Jan. 2; s Paley Major 2050, d. Knelle Pet 9703 by Jayes 1st 1841.

Class 140. - *Sussex Heifers, calved in 1909.* [9 entries, 4 absent.]

- 1248 I. (£15.) JAMES BUCHANAN, Lavington Park, Petworth, for Lavington Nora 2nd, born Jan. 17; s Shillingale Gold 2nd 2191, d. Apsley Nora 10141 by Duke of Drungewick 3rd 1808
1247 II. (£6.) JOHN AUNGHER, Lynwick, Rudgwick, for Lynwick Paley Mabel, born March 13; s Charles Earl 2300, d. Paley Mabel 9286 by Autocrat 2020.
1246 III. (£4.) - JOHN AUNGHER, for Lynwick Anemone, born March 3; s Albert 2nd, 2052, d. Anemone 10408 by Friars Preston 2088
1252 R. N. & H. C. - W. F. WINOCH, Tilsden, Cranbrook, for Tilsden Willsher 6th.

Welsh.*

Class 141. - *Welsh Bulls, calved on or after December 1, 1901, and before December 1, 1907.* [4 entries.]

- 1256 I. (£10.) - C. G. ASSHETON SMITH, Vaynol, Bangor, for Wern Goalkeeper 383, born May 30, 1907, bred by R. M. Greaves, Wern, Portmadoc; s. Wern Defender 45, d. Wern Bilberry 185 by Wern Cawr 42
1255 II. (£6.) C. G. ASSHETON SMITH, for Manoel, born July 5, 1907; s. Berw B. 155, d. Penttyrch 3rd by Del 147.
1254 III. (£4.) - R. M. GREAVES, Wern, Portmadoc, for Wern Gallant 382, born May 21, 1907; s. Wern Emperor 50, d. Wern Delilah 199 by Tip 465.
1257 R. N. & H. C. - MRS. M. E. WYNNE-FINCH, Voelau, Betws-y-Coed, for Camelot 2nd.

Class 142. - *Welsh Bulls, calved on or after December 1, 1907, and before December 1, 1908.* [2 entries, 1 absent.]

- 1258 I. (£10.) - HARRY GRIFFITH, Mollheyryn, Pwllhell, for Maillteyrn Cawr 344, born March 25, 1908, bred by W. E. Onkeley, Plas, Tnny-Bwlch; s. Victor 364, d. Pretoria 1847 N.W.

Class 143. *Welsh Bulls, calved on or after December 1, 1908, and before December 1, 1909.* [7 entries, none absent.]

- 1261 I. (£10.) R. M. GREAVES, Wern, Portmadoc, for Wern Inky 338, born March 20, 1909; s. Duke of Wellington 294, d. Moltano 385 by Mafeking 400.
1266 II. (£6.) THE HON. F. G. WYNN, Glynllivon Park, Carnarvon, for Glyn Constable 414, born Feb. 11, 1909; s. The Shah 204, d. Tegwald 688 by Glyn Prince.
1262 III. (£4.) - EDWARD GRIFFITH, Carrig Barred, Roynidernyn, Anglesey, for Barcawd, born Jan. 20, 1909; s. Penttyrch Cawr, d. Tal Cochion.
1263 R. N. & H. C. - MEYERS GRIFFITH, Glastryn Farm, Chwilog, for Glastryn Bob.

Class 144. - *Welsh (cows or Heifers (in-milk), calved before December 1, 1907.* [2 entries.]

- 1268 I. (£10.) - THE HON. F. G. WYNN, Glynllivon Park, Carnarvon, for Glyn Mair 1220, born July 8, 1906, calved Nov. 9, 1908; s. The Shah 204, d. Queen Hiasan 683 by Mafk 508 N.W.
1267 II. (£6.) R. M. GREAVES, Wern, Portmadoc, for Wern Dusky 183, born Jan. 3, 1904, calved Dec. 10, 1909; s. Tip 465, d. Merch Madoc.

* Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 138-140.

* £40 towards these Prizes were given by the Welsh Black Cattle Society.

lxxiv *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 145. - *Welsh Heifers, calved on or after December 1, 1907, and before December 1, 1908.* [5 entries, 1 absent.]

- 1270 I. (£10) - R. M. GREAVES, Wern, Portmadoc, for *Wern Helen*, born Oct. 1, 1908; s. Duke of Wellington 204, d. *Wern Empress* 735 by *Llyngrwn Bob* 100.
 1269 II. (£6) - H. O. ELLIS, Tynhendre, Bangor, for *Hendre Graceful* 990, born Aug. 8, 1908; s. *Hendre Cawr* 328, d. *Hendre* 104.
 1271 III. (£4) - LORD HARLECH, Glyn, Talsarnau, for *Glyn Myra*, born Jan. 20, 1908; s. *Glyn Alphonso* 345, d. *Glyn Cynfil* 1013 by *Pennally Tip Top* 107.
 1273 E. N. & H. O. - THE HON. F. G. WYNN, Glynllivon Park, for *Glyn Mary*.

Class 146. - *Welsh Heifers, calved on or after December 1, 1908, and before December 1, 1909.* [3 entries.]

- 1275 I. (£10) - R. M. GREAVES, Wern, Portmadoc, for *Wern Investment* 1005, born March 16, 1909; s. Duke of Wellington 204, d. *Glasfryn Grace* 615 by *Wern Plum*.
 1274 II. (£6) - R. M. GREAVES, for *Wern Ibez* 1007, born June 21, 1909; s. Duke of Wellington 204, d. *Modder* 101 by *Mueking* 100 N.W.
 1276 III. (£4) - THE HON. F. G. WYNN, Glynllivon Park, Carnarvon, for *Glyn Cawswr* 1226, born Dec. 5, 1908; s. *The Shah* 204, d. *Glyn Mair* 1230.

Red Polls.¹

Class 147. - *Red Poll Bulls, calved in 1905, 1906, 1907, or 1908.*

[10 entries, none absent.]

- 1280 I. (£10, & Champion.²) - LORD ORANWORTH, Letton, Norfolk, for *Davyson* 297th 9564, born Aug. 10, 1905, bred by John Hammond, Bale, East Dereham; s. *Majolino* 3600, d. *Davy* 260th 18571 by *Handyman* 8213.
 1279 II. (£6, & E. N. for Champion.³) - SIR WALTER CORBET, BT, Acton Reynold, Shrewsbury, for *Acton Corvus* 9870, born March 24, 1908; s. *Acton Merlin* 9637, d. *Desiree* of Johnston 16483 by *Starston Ruler* 5899.
 1281 III. (£4) - LORD ORANWORTH, for *Letton Vanity Davyson* 9810, born April 17, 1907; s. *Davyson* 265th 9280, d. *Vanity* 20151 by *Nelson* 7404.
 1285 E. N. & H. O. - A. J. SMITH, Rendlesham, Woodbridge, for *Rendlesham Mainstay*.

Class 148. - *Red Poll Bulls, calved in 1909.* [8 entries, none absent.]

- 1293 I. (£10) - THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for *Red David* 10069, born Jan. 17; s. *Red-kin* 9823, d. *Davy* 283rd 19713 by *Majolino* 3600.
 1290 II. (£6) - SIR WALTER CORBET, BT, Acton Reynold, Shrewsbury, for *Acton Falcon* 9988, born Jan. 31; s. *Acton Merlin* 9657, d. *Nellie* 6th 17264 by *Redvers* 6570.
 1291 III. (£4) - SIR WALTER CORBET, BT, for *Acton Rainbow* 9908, born Jan. 19; s. *Acton Foam* 9763, d. *Acton Primrose* 10603 by *Albert* 7789.
 1289 E. N. & H. O. - SIR RICHARD COOPER, BT, Ashlyns Hall, Berkhamsed, for *Ashlyns Jumbo*.

Class 149. - *Red Poll Cows or Heifers (in-milk), calved in or before 1907.*

[10 entries, none absent.]

- 1300 I. (£10, & Champion.³) - SIR WALTER CORBET, BT, Acton Reynold, Shrewsbury, for *Waxlight* 2nd 18965, born Feb. 28, 1902, calved May 22, 1910, bred by the late Lord Amherst of Hackney, Didsington Hall, Brandon; s. *Royal Standard* 8707, d. *Wax Doll* 2nd 9068 by *Red Shirt* 2014.
 1295 II. (£6, & E. N. for Champion.¹) THOMAS BROWN & SON, Marham Hall, Downham Market, for *Frill* 18051, born Oct. 8, 1901, calved June 7, 1910; s. *Wentworth* 5257, d. *Freda* 10287 by *Erulus* 841.
 1301 III. (£4) - THE RT. HON. AILWYN E. FELLOWES, Honingham Hall, Norwich, for *Chedda* 19075, born Oct. 7, 1903, calved April 20, 1910, bred by A. James, Cotton House, Rugby; s. *Admiral Popoff* 8910, d. *Chedda* 3rd 11653 by *Margus* 1514.
 1302 E. N. & H. O. - A. CARLYLE SMITH, Ashmoor, Campden Ash, Wickham Market for *Queen Mab*.

Class 150. - *Red Poll Heifers, calved in 1908.* [7 entries, none absent.]

- 1310 I. (£10) - THE RT. HON. AILWYN E. FELLOWES, Honingham Hall, Norwich, for *Alba* 5th 21518, born June 23; s. *Alako* 9438, d. *Albi* 18005 by *Arthur* 802.
 1308 II. (£6) - SIR WALTER CORBET, BT, Acton Reynold, Shrewsbury, for *Acton Larkspur* 21516, born April 12; s. *Acton Merlin* 9657, d. *Waxlight* 2nd 18965 by *Royal Standard* 8707.

¹ £20 towards these Prizes were given by the Red Poll Cattle Society.

² Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 147 and 148.

³ Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 149-151.

Award of Live Stock Prizes at Liverpool, 1910. lxxv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1311 III. (£1.) (1) DUDLEY SMITH, Strensham Court, Worcester, for *Crackle*, born April 11, s. Nelson 1st, d. Ashlyn s. Sybil 2nd 9112 by *Charmy Boy* 2647.

1306 R. N. & H. C. THOMAS BROWN & SON, Marham Hall, Downham Market, for *Alma*.

Class 151. *Red Poll Heifers, calved in 1909.* [12 entries, 1 absent.]

1314 I. (£10.) THOMAS BROWN & SON, Marham Hall, Downham Market, for *Perfume* 2210, b. in Jan. 11; s. Gilroy 8801, d. Prima 20187 by Fitzgerald 8054.

1312 II. (£6.) W. E. BALSTON Barvin, Potters Bar, for *Barvin Diana* 21088, born Jan. 18; s. Robin 9160 d. Dullington Davy 17th 19738 by Royal Standard 8707.

1317 III. (£1.) LORD CRANWORTH, Letton, Norfolk, for *Letton Judith* 2nd B 22149, born Jan. 21; s. Letton Davyson 1st 9709, d. Judith 2nd 20123 by Marquis Blush 9128.

1323 R. N. & H. C. (1) DUDLEY SMITH, Strensham Court, Worcester, for *Aggie*.

Class 152. *Milk Yield Prizes, open to Red Poll Cows and Heifers entered in Class 149 only.* [6 entries, none absent.]

1208 I. (£10.) KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for *Sudbourne Queen* 1st 20122, born Sept. 3, 1904, calved April 22, 1910, s. Sudbourne Russett 9500, d. Sudbourne Queen 18361 by Motor 6455.

1200 II. (£8.) SIR WALTER CORRIET, BT., Acton Reynold, Shrewsbury, for *Acton Filippa* 20180, born March 3, 1905, calved April 19, 1910, s. Albert 7789, d. Linda 3rd 13767 by Planet 4579.

1300 III. (£4.) SIR WALTER CORRIET, BT., for *Waxlight* 2nd. (See Class 149.)

Aberdeen Angus.¹

Class 153. *Aberdeen Angus Bulls, calved on or after December 1, 1904, and before December 1, 1907.* [5 entries, 2 absent.]

1328 I. (£10, & Champion.) JOHN MCG. PETRIE, Glenlogie, Forbes, Alford, Aberdeen-shire, for *Metaphor* 27161, born Dec. 8, 1906, bred by T. H. Bainbridge, Fehott, Felton; s. Behador 16196, d. Mistress Nelly 32975 by Just Juerg of Morlich 15004.

1326 II. (£6.) GEORGE HOYLES, Skidby Manor, near Hull, for *Rond Monarch* 3rd or *Skidby* 27419, born April 7, 1906; s. Erasmus of Skidby 25563, d. Frouy Queen 2nd of Somerby 22726 by Flag Staff 7544.

1324 R. N. & H. C. ANDREW BROOKS, North Elphinstone, Tranent, East Lothian, for *Eagle of Dalmeny*.

Class 154. *Aberdeen Angus Bulls, calved on or after December 1, 1907, and before December 1, 1908.* [6 entries, 2 absent.]

1329 I. (£10.) T. H. BAINBRIDGE, Fehott, Felton, Northumberland, for *Gerace of Ballindalloch* 28100, born April 13, 1908, bred by Sir John Macpherson Grant, Bt., Ballindalloch Castle, N.B.; s. Edensor 23081, d. Gera 38030 by Denmore 13805.

1332 II. (£8.) J. J. CRIDLAN, Malsmore Park Farm, Gloucester, for *Rubelate of Malsmore* 28700, born Dec. 24, 1907; s. Kinnelste 25576, d. Ruby of Malsmore 2nd 38743 by Wizard of Malsmore 21165.

1333 R. N. & H. C. E. J. BEAUMONT NESBITT, Tubberdaly, Edenderry, for *Douro of Tubberdaly*.

Class 155. *Aberdeen Angus Bulls, calved on or after December 1, 1908, and before December 1, 1909.* [7 entries, 1 absent.]

1340 I. (£10.) CAPT. J. H. GREER, Curragh Grange, Curragh Camp, Co. Kildare, for *Ermelo* 28214, born Jan. 17, 1909, bred by James Kennedy, Doonholm, Ayr; s. Montello 27103, d. Esoteric of Glamis 36129 by Bacehus of Glamis 14095.

1339 II. (£8.) (1) D. PARKER, C.B., M.P., Rush Court, Wallingford, for *Eligible of Ballindalloch* 28108, born March 21, 1909, bred by Sir John Macpherson Grant, Bt., Ballindalloch Castle, N.B.; s. Joshua 19257, d. Elligina 35002 by Dolamore 13805.

1337 III. (£4.) MR. GEORGE A. COOPER, BT., Hurstley Park, Winchester, for *Jasper of Hurstley* 29119 born Feb. 20, 1909; s. Evoluturus 21908, d. J. Imma 56th of Morlich 35274 by Joshua 19257.

1335 R. N. & H. C. LORD ALLENDALE, Bywell Hall, Stocksfeld-on-Tyne, for *Elmhore*.

Class 156. *Aberdeen Angus Cows (in-milk), calved before December 1, 1908.* [4 entries, 1 absent.]

1341 I. (£10.) (1) D. PARKER, C.B., M.P., Rush Court, Wallingford, for *Rhona of Haynes*, born Jan. 20, 1908, calved April 28, 1910, bred by the late W. B. Greenfield, Haynes Park, Bedford; s. Royal Justice of Haynes 22004, d. Rhona 3rd of Dancesfield 35790 by Diamondfield Jester 18949.

1343 II. (£6.) J. J. CRIDLAN, Malsmore Park Farm, Gloucester, for *Blackbird 2nd of Malsmore* 3707, born Jan. 9, 1904, calved Jan. 11, 1910; s. Elate 16518, d. Bonnet 6th of Haynes 21875 by Monarch 2nd of Advie 11084.

¹ £20 towards these Prizes were given by gentlemen interested in the breed.

² Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 153-159.

lxxvi *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 157.—*Aberdeen Angus Heifers (in-milk), calved on or after December 1, 1906, and before December 1, 1907.* [5 entries, none absent.]

1350 I. (£10, Champion,¹ & R. N. for Champion.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Juanita Erica 42382, born Feb. 14, 1907, calved Feb. 27, 1910; s. Prince of the Wasmal 23751, d. Juana Erica 30285 by Premier of Finlaring 17059.

1348 II. (£6.)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, for Gay Favourite of Haynes 48906, born Feb. 6, 1907, calved Jan. 22, 1910, bred by the late W. B. Greenfield, Haynes Park, Bedford; s. Gay Boy of Danesfield 21907, d. Tedfold Favourite 6th 24876 by Epigram of Cortachy 8292.

1347 R. N. & H. C.—J. J. CRIDLAN, for Exact of Preston.

Class 158.—*Aberdeen Angus Heifers, calved on or after December 1, 1907 and before December 1, 1908.* [1 entries, 1 absent.]

1354 I. (£10.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Juanita Erica 44037, born March 20, 1908, s. Prince of the Wasmal 23751, d. Juana Erica 30285 by Premier of Finlaring 17059.

1351 II. (£6.)—T. H. BAINBRIDGE, Eshott, Felton, for Marjorie of Eshott 44874, born April 28, 1908; s. Idelamere 22038, d. Matilda 7th of Aldbar 31515 by Marvel of Advie.

Class 159.—*Aberdeen Angus Heifers, calved on or after December 1, 1908, and before December 1, 1909.* [13 entries, 2 absent.]

1366 I. (£10, & R. N. for Champion.) E. J. BEAUMONT NESBITT, Tubberdaly, Edenderry, for Jill of Tubberdaly 45949, born Dec. 14, 1908, s. Butress 18357, d. Jacobina of Tubberdaly 41017 by Euthen 20504.

1364 II. (£6.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Eulogia 45672, born Jan. 9, 1909; s. Prince of the Wasmal 23751, d. Eureka of Sands 37638 by Sutherland.

1362 III. (£4.)—JAMES KENNEDY, Doonholm, Ayr, for Elmyra 45665, born Dec. 17, 1908; s. Edensor 23081, d. Evrosal 39029 by Rosador 15996.

1361 R. N. & H. C.—JAMES KENNEDY, for Elismonda.

Galloways.³

Class 160.—*Galloway Bulls, calved on or after December 1, 1904, and before December 1, 1908.* [5 entries, 1 absent.]

1371 I. (£10.)—FRANCIS N. M. GOURLAY, Broomfield, Moniaive, for Keystones 9889, born Dec. 11, 1905, bred by Thomas Biggar & Sons, Chapelton, Dalbeattie; s. Excelsior 7702, d. Lady Stanley 10th 15432 by Golden Age 6660.

1368 II. (£6.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Javelin 9441, born Jan. 3, 1905; s. Excelsior 7702, d. Golden Daisy 17421 by Golden Age 6660.

1370 III. (£4.)—SIR ROBERT W. BUCHANAN-JARDINE, BT., Castlemilk, Lockerbie, for Baron 10883, born Dec. 2, 1906, bred by John Blackley, Marchhill, Dumfries; s. Chancellor 9010, d. Miss Saely 7th of Tarbrooch 18423 by Lord William 7108.

1369 R. N. & H. C.—H. L. C. BRASSEY, M.P., for Hero of Apethorpe.

Class 161.—*Galloway Bulls, calved on or after December 1, 1908, and before December 1, 1909.* [3 entries.]

1374 I. (£10.)—ROBERT GRAHAM, Auchengassel, Twynholm, for Legacy of Auchengassel 10902, born Feb. 27, 1909, s. War Boy 10176, d. Lady Betty 18158 by Coming King 6901.

1376 II. (£6.)—GEORGE ROBB, Barroche, New Galloway, for Jenkins 10852, born March 22, 1909, bred by William A. McTurk, Barroche, Dalry, Galloway; s. Lear 9941, d. Fanny 3rd of Barroche 19519 by Hallmark 8841.

1378 III. (£4.)—H. L. C. BRASSEY, M.P., Apethorpe Hall, Wansford, for Excelsior of Apethorpe, born Dec. 31, 1908; s. Blackmorthick, d. Janetie 18761 by Excelsior 7702.

Class 162.—*Galloway (ows or Heifers (in-milk), calved before December 1, 1907.* [3 entries, 1 absent.]

1378 I. (£10.)—SIR ROBERT W. BUCHANAN-JARDINE, BT., Castlemilk, Lockerbie, for Novette of Castlemilk 18782, born June 27, 1906, calved Dec. 12, 1909; s. Director of Castlemilk 8823, d. Nancy Lee 3rd of Castlemilk 15019 by Black Douglas of Castlemilk 5002.

1377 II. (£6.)—SIR ROBERT W. BUCHANAN-JARDINE, BT., for Maggie Lauder 5th of Tarbrooch 18829, born Dec. 2, 1904, calved Jan. 5, 1910, bred by John Cunningham, Tarbrooch, Dalbeattie; s. Bondsman 7306, d. Maggie Lauder 87466 by Macdougall 4th.

¹ Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society in Classes 153-159.

² Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 153-159.

³ £16 towards these Prizes were given by the Galloway Cattle Society.

Award of Live Stock Prizes at Liverpool, 1910. lxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 163. *Halloway Heifers, calved on or after December 1, 1907, and before December 1, 1909.* [5 entries, none absent.]

- 1379 I. (£10.) THOMAS BIRDA & SONS, (bapelon Dalbeattie, for Maggie 6th of Chapellton 2111, born Dec. 28, 1907; s Oswald of Lochside 9705, d Maggie 6th of Chapellton by Hazelbar 7102.
1381 II. (£25.) FRANCIS N. M. GOURLAY, Broomfield, Monmave, for Favourite 2nd of Craigneston 19449, born Jan. 10, 1908; s Koystone 9640, d. Favourite 12th of Lochnait 18166 by Contender 1th of Turbacoob 5904
1383 III. (£1.) ROBERT GRAHAM, Auchengassel, Twynholm, for Kitty of Auchengassel 21131, born Feb. 27, 1908; s Fiseil Policy of Auchengassel 9068, d. Violet 3rd of Cally 13787 by Camp Followers Heir 5573
1380 E. N. & H. C. SIR ROBERT W. BUCHANAN-JARDINE, BT., for Novlette 2nd of Castlemilk.

Highland.

Class 164. *Highland Bull, calved in or before 1909.* [1 entry.]

- 1381 I. (£10.) G. C. SELLAR, Ardornish, Morven, for Morven Monarch, brindled, born March 18, 1907, bred by Mrs. Craig Sellar, Ardornish; s Valentine 23rd 2081, d. Cruinneag 6th 4790 by Victor 13th 1200.

Class 165. *-Highland Cows or Heifers (in-milk).* [1 entry.]

- 1385 I. (£10.) G. C. SELLAR, Ardornish, Morven, for Sgiathach 48th 6967, yellow, born Jan. 2, 1903, calved Jan. 11, 1910, bred by the late J. V. Smith, Ardornish; s Valentine 18th 1748, d. Sgiathach 21st 4228 by An Gaisgeach 971.

Ayrshires.

Class 166. *-Ayrshire Bulls, calved in or before 1909.* [3 entries, 1 absent.]

- 1386 I. (£10.) ANDREW MITCHELL, Lochtergus, Kirkcudbright, for Beuchan Peter Pan 7140, white and brown, born Feb. 24, 1906, bred by Robert Osborne, Morton Mains, Thornhill; s Duke of Wigtown 4735, d. Morton Mains Young Bonnie Jean 17445 by Gigantic Stunner of Wynholm 8872.
1388 II. (£25.) ANDREW MITCHELL, for Nethercraigs Silver Crest 7511, mostly white, born Jan. 31, 1908, bred by John Cochrane, Nethercraig, Kilmarnock; s Auchenneunzie Lad Osborne 0088, d. Nethercraig Forest Queen 17707 by Not Likely of Hillhouse 4189.

Class 167. *-Ayrshire Cows or Heifers (in-milk).* [7 entries, 2 absent.]

- 1392 I. (£10.) ANDREW MITCHELL, Lochtergus, Kirkcudbright, for Kilmory Favourite 554, brown and white, born April, 1904, calved June 4, 1910, bred by Donald Black, Devoil, Port Glasgow; s Titwood General Hunter 4809, d. Ladycroft.
1390 II. (£25.) CHARLES DOUGLAS, Auchlochan, Leymahagow, for Auchlochan McLean, white and brown, born April, 1904, calved May 19, 1910, bred by Alexander Harvey, Trece, Riccarton; s Captain of Burnhouse 4581, d. Trece McLean by Craigie Mains Floran Chief 7420.
1389 III. (£4.) ALEXANDER CROSS, Knockdon Farm, Maybole, for Knockdon Prim 18168, mostly white, born April 18, 1905, calved April 20, 1910; s Bright Lad 2nd of Knockdon 4280, d. Derby Polly 3rd of Knockdon 6188 by Prince Charley of Newton.
1391 E. N. & H. C. WILLIAM NISBET, for Dalffible Bella 2nd.

Class 168. *Ayrshire Cows or Heifers (in-calf).*¹ [4 entries, 2 absent.]

- 1393 I. (£10.) ANDREW MITCHELL, Lochtergus, Kirkcudbright, for Lochfergus Sloth, white and brown, born April 14, 1906, bred by J. Young, Castlehill, Eaglesham; s Sigh (Hit of Titwood 3080, d. Dandy of Castlehill by Shalloch.
1390 II. (£25.) ALEXANDER CROSS, Knockdon Farm, Maybole, for Knockdon Bridesmaid 4th 10090, white and brown, born April 16, 1906; s Bright Lad 2nd of Knockdon 4280, d. Bridesmaid of Knockdon 12781 by Yellow Squire of Castlehill 2012.

Class 169. *Milk Yield Prizes, open to Ayrshire Cows and Heifers entered in Class 167 only.* [4 entries.]

- 1394 I. (£10.) WILLIAM NISBET, Lordship, Hinxton, Great Chesterford, Essex, for Dalffible Bella 2nd 19684, brown and white, born Sept. 27, 1901, calved May 28, 1910, bred by John Mackie, Lordship, Hinxton; s Tommy of Dalffible 4668, d. Dalffible Bella.
1395 II. (£25.) WILLIAM NISBET, for Dalffible Daisy Bell 16681, black and white, born Dec. 25, 1900, calved March 15, 1910, bred by John Mackie, Parkgate Dalffible, Dumfries; s Knockdon of Markahield 3725, d. Tibbie of Dalffible 13288.
1390 III. (£4.) CHARLES DOUGLAS, for Auchlochan McLean. (See Class 167.)
1392 E. N. & H. C. ANDREW MITCHELL, for Kilmory Favourite 5th.

¹ Prizes given by the Ayrshire Cattle Herd Book Society.

lxxviii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Jerseys.

N.B.—In the Jersey Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.

Class 170.—*Jersey Bulls, calved in 1905, 1906, 1907, or 1908.*

[11 entries, 2 absent.]

- 1409 I. (£10, & Champion.¹)—LORD ROTHSCHILD, Tring Park, Herts., for Champion of St. Peter 9533, whole colour, born May 15, 1907, bred by J. Du Val, St. Peter's, Jersey; s. Golden Champion 8205, d. Octavia by Successor 7578.
 1409 II. (£8, & R. N. for Champion.¹)—JERSEY DE KNOOP, Calveley Hall, Tarporeley, for Inspector 9284, whole fawn, born April 18, 1908, bred by J. S. Le Grosley, St. Martin's, Jersey; s. Sultan of Oaklands (3746), d. Golden Crock (11579).
 1401 III. (£4.)—W. M. CAZALET Fairlawn, Tonbridge, for Felix 9579, whole colour, born May 28 1908; s. Oaklands Glory 9370, d. Fideles (9600) F.S.H.C.
 1402 IV. (£3.)—RHODES H. COBB, The Grove, Fether, for Blue Blood 9503, whole colour, born May 30, 1908, bred by J. E. Le Marquand, (Ironville, Jersey; s. Sultan of Oaklands 9083, d. Honeyuckle 2nd (8768) P.S.H.C. by Golden Marquis 8873.
 1408 R. N. & H. C.—ARTHUR POOCOK, Freegrove, Calne, Wilts., for Jessie's Noble.

Class 171.—*Jersey Bulls, calved in 1909.* [12 entries, 5 absent.]

- 1419 I. (£10.)—ARTHUR POOCOK, Freegrove, Calne, Wilts., for Barrister's Reminder, whole colour, born April 25; s. Barrister 8424, d. Spot by Silvio 6080.
 1411 II. (£8.)—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for Silver Stick, brown, born Feb. 3, bred by H. Cabot, St. Clements, Jersey; s. King Anemone (4108), d. Instructive (10670).
 1420 III. (£4.)—LORD ROTHSCHILD, Tring Park, Herts., for Picador, whole colour, born May 15, bred by Earl Cadogan, K.G., Culford Hall, Bury St. Edmunds; s. Alphonso 9129, d. Enfield Rose 5th by Idas Glory 8558.
 1422 IV. (£3.)—G. MURRAY SMITH, Gumley Hall, Market Harborough, for Derry's Prosper, whole colour, born April 17, bred by J. W. Cabot, Trinity, Jersey; s. Derry's Golden Lad (9472), d. Prosperous 3rd (8917).
 1415 R. N. & H. C.—CAPT. M. HILL, Westwood House, West Bergholt, for Crown Prince.

Class 172.—*Jersey Cows (in-milk), calved in or before 1906.*

[26 entries, 2 absent.]

- 1439 I. (£10, & Champion.²)—LORD ROTHSCHILD, Tring Park, Herts., for Oute 2nd (9072) P.S.O., whole colour, born March 16, 1900, calved April 4, 1910, bred by P. Guenault, St. Peter's, Jersey; s. Ohio 7142, d. Oute (8574) F.S.H.C.
 1435 II. (£8, & R. N. for Champion.²)—A. MILLER-HALLETT, Goddington, Chelmsfield Kent, for Goddington Foxglove (vol. 19, p. 310), whole colour, born April 21, 1905 calved May 9, 1910; s. Flying Foam 7204, d. Meadow Girl by Prism (2383).
 1424 III. (£4.)—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for Irish Lass (vol. 18, p. 324), brown, born Aug. 13, 1904, calved March 7, 1910, bred by Mrs. Spencer, Oakhill, Bath; s. Emerald 7797, d. Arcadia 2nd by Duke or Oriana 5888.
 1438 IV. (£3.)—ARTHUR POOCOK, Freegrove, Calne, Wilts., for Freegrove Lily (vol. 19, p. 305), whole colour, born Jan. 5, 1905, calved April 21, 1910, s. Speculative 8376, d. Lily Gold by Nurmi's Golden Lad 7610.
 1432 V. (£3.)—THE MARCHIONESS OF LINLITHGOW, Hopetoun House, South Queensferry, for Velvetan (vol. 20, p. 451) F.S., born Oct. 28, 1899, calved April 9, 1910.
 1442 R. N. & H. C.—G. MURRAY SMITH, Gumley Hall, Market Harborough, for Jewel.

Class 173.—*Jersey Heifers (in-milk), calved in 1907.*

[16 entries, 5 absent.]

- 1449 I. (£10.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, for Belle Mahone, whole colour, born Aug. 9, calved Feb. 27, 1910; s. Topper 8393, d. Burgh Mabel by Carnatie, Gem 7445.
 1461 II. (£8.)—LADY SMYTH, Ashton Court, Bristol, for Brunon 12th (vol. 21, p. 258), whole colour, born April 18, calved June 2, 1910, bred by J. Renouf, St. Martin's, Jersey; s. Noble of Oaklands (9366), d. Brunon 9th (10953) P.S.H.C. by Leda's Golden Lad.
 1450 III. (£4.)—EARL CADOGAN, K.G., for Statuette, (vol. 21, p. 426) broken colour, born May 15, calved March 19, 1910, bred by John Gartrell, St. John's, Jersey; s. Golden Maid's Prince 7836, d. Spotted Hip 5th (11626) P.S.O. by Napoleon Buonaparte 6966.
 1455 R. N. & H. C.—JAMES JOICEY, Poulton Priory, Fairford, for Lily of the Valley.

¹ Champion Prize of £10 given by the English Jersey Cattle Society for the best Bull in Classes 170 and 171.

² Champion Prize of £10 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 172-175.

Award of Live Stock Prizes at Liverpool, 1910. lxxix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 174.—*Jersey Heifers (in-milk), calved in 1908.*

[17 entries, 8 absent.]

- 1479 I. (£10.) Mrs C. MCINTOSH, Havering Park, Romford, for *Belle Aménie*, fawn, born March 21, calved April 16, 1910, bred by the Marquis of Winchester, Ampthorp St. Marys, Andover; s. *King Minnie* 8234, d. *Lady Belle* by *Oyster* 2nd 6978.
- 1477 II. (£6.) LORD ROTHSCCHILD, Tring Park, Herts., for *Pontorson* 12th (vol. 20, p. 7), whole colour, born May 15, calved May 14, 1910, bred by W. J. Alexander, North Road, Hertford; s. *Bairdster* 7719, d. *Pontolson* 11th by *Frank Fietz* 8187.
- 1476 III. (£4.) LORD ROTHSCCHILD, for *Pearl* (vol. 20, p. 111), whole colour, born Jan. 27, calved March 22, 1910; s. *Warders* 6195, d. *Amina's Pearl* by *Clarentia's Lad* 8167.
- 1485 IV. (£3.) HENNER BEWLEY, Danum, Rathgar, Co. Dublin for *Augerez's Golden Maid*, whole colour, born Jan. 12, calved May 1, 1910, bred by H. J. Le Brocq, St. Peter's, Jersey; s. *Golden Maid's Prince* (7886), d. *Augerez's Diamond* (9624).
- 1480 E. N. & E. C.—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for *Yeovil Lassie*.

Class 175.—*Jersey Heifers, calved in 1909.* [15 entries, 4 absent.]

- 1485 I. (£10.)—W. M. CAZALME, Fairlawn, Tonbridge, for *Defiance*, whole colour, born March 21; s. *Oaklands Glory* 9370, d. *Dindainful* (vol. 20, p. 291) by *Western Mail* 8759.
- 1492 II. (£6.)—LORD ROTHSCCHILD, Tring Park, Herts., for *Royal Bess*, whole colour, born March 31, bred by R. J. Pym, Jun., St. Lawrence, Jersey; s. *Royal Guide* 4101, d. *Oaklands Bess* (9833) P.M.H.C. by *Favori* 6851.
- 1489 III. (£4.)—MRS C. MCINTOSH, Havering Park, Romford, for *Bright Lustine* 2nd, black, born April 5; s. *Royal Ensign* 9053, d. *Bright Lustine* (vol. 18, p. 259) by *King Edward* 3067.
- 1481 IV. (£3.) EARL CADOGAN, K.G., Galford Hall, Bury St. Edmunds, for *Merry Widow*, whole colour, born April 17; s. *Alfonso* 9120, d. *Merit* (vol. 20, p. 378) by *Topper* 8893.
- 1498 E. N. & E. C.—G. MURRAY SMITH, for *Carolina*.

Class 176.—*Jersey Cows or Heifers (in-milk), bred by Exhibitor, and sired in Great Britain or Ireland. Open to Animals entered in Classes 172, 173, and 174 only.*¹ [10 entries, none absent.]

- 1485 I. (£10.)—A. MILLER-HALLETT, for *Goddington Foxglove*. (See Class 172.)
- 1440 II. (£8.) EARL CADOGAN, K.G., for *Belle Mahone*. (See Class 173.)
- 1442 III. (£4.)—G. MURRAY SMITH, Gumley Hall, Market Harborough, for *Jewel* (vol. 21, p. 335) whole colour born May 4, 1906, calved May 25, 1910; s. *Briar* 8095, d. *Regalia* by *Mont Orgeuil* 7310.
- 1481 E. N. & E. C.—JAMES JOICHEY, Poulton Priory, Farnford, Glos., for *Gloire de Dijon*.
- Class 177.—*Milk Yield Prizes, open to Jersey Cows and Heifers entered in Classes 172, 173, and 174 only.* [17 entries, none absent.]
- 1448 I. (£10.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts, for *Caprice* (vol. 20, p. 273), fawn, born July 28, 1905, calved Jan. 5, 1910; s. *Oxford Sunbeam* 8850, d. *Captious* by *Geonniks Lad* 8672.
- 1421 II. (£6.) JOSEPH BRUTTON, for *Irish Lass*. (See Class 172.)
- 1444 III. (£4.) J. H. SMITH-BARRY, for *Malvoisie*, (vol. 20, p. 869), fawn, born Aug. 12, 1905, calved Dec. 25, 1909; s. *Gay Boy* 7510, d. *Madaira*, 7th by *Reminder's* *Invention*.
- 1441 E. N. & E. C.—LORD ROTHSCCHILD, Tring Park, Herts., for *Twylish* 11th.

Guernseys.²

N.B.—Unless otherwise stated, the numbers refer to the *English Guernsey Herd Book*.

Class 178.—*Guernsey Bulls, calved in 1905, 1906, 1907, or 1908.*

[4 entries, none absent.]

- 1498 I. (£10.) SIR R. A. HAMBRO, Hayes Place, Hayes, Kent, for *Hayes Coronation* 3rd 1898, fawn and white, born June 20, 1907; s. *Coronation King* 1856, d. *Hayes Olive* 8838 by *Merry Anton* 1400.
- 1499 II. (£6.) JOHN PIERPONT MORGAN, Dover House, Roehampton, for *Polo* 3rd of the *Vauxbelets* 2174, light red and white, born Jan. 20, 1908, bred by J. Hunsault, Les Vauxbelets, St. Andrews, Guernsey; s. *Pride of the Day*, 1849 P.S., R.G.A.S., d. *Beauty Pearl* 3rd of the *Vauxbelets* 6251 P.S., R.G.A.S.
- 1497 E. N. & E. C. C. L. BELL, Woolstington Hall, Newcastle-on-Tyne, for *Merton Secret*.

Class 179.—*Guernsey Bulls, calved in 1909.* [6 entries, 2 absent.]

- 1502 I. (£10.)—SIR R. A. HAMBRO, Hayes Place, Hayes, Kent, for *Hayes Cherub* 2145, fawn and white, born June 15; s. *Gay Boy* 2020, d. *Hayes Golden Cherry* 4th 6901 by *Coronation King* 1856.

¹ Prizes given by the English Jersey Cattle Society.

² £10 towards these Prizes were given by the English Guernsey Cattle Society.

lxxx *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1503 II. (£8.)—SIR E. A. HAMBRO, for *Hayes Fido* 2146, fawn and white, born May 18; s. *Hayes Coronation* 3rd 1236, d. *Hayes F. F. 2nd* 7208 by *Itchen* Royal 1750.
1501 E. N. & H. C.—W. H. N. GOSCHEN, for *Maple King* 2nd.

Class 180.—Guernsey Cows or Heifers (in-milk), calved in or before 1907.
[7 entries, 1 absent.]

- 1508 I. (£10.)—SIR E. A. HAMBRO, *Hayes Place*, *Hayes*, Kent, for *Hayes Olive* 5838, fawn, born June 8, 1903, calved April 16, 1910; s. *Merry Anton* 1400, d. *Olive Branch* 5268 by *Billy*.
1507 II. (£6.)—SIR E. A. HAMBRO, for *Hayes Express* 5830, fawn, born July 5, 1903, calved April 12, 1910; s. *Merry Anton* 1400, d. *Express* 4132 by *Rydale* 4th 805 P.S., R.G.A.S.
1513 E. N. & H. C.—LADY TICHBORNE, for *Rownhams Gloriosa*.

Class 181.—Guernsey Heifers, calved in 1908. [3 entries, none absent.]

- 1516 I. (£10.)—LADY TICHBORNE, *Tichborne Park*, *Alresford*, for *Itchen Pearl* 7th 7895, fawn and white, born Jan. 15; s. *Golden Secret* 1500, d. *Itchen Pearl* 6154 by *May Day* 1132.
1514 II. (£6.)—SIR E. A. HAMBRO, *Hayes Place*, *Hayes*, Kent, for *Hayes Loyal* 3rd 7674, red, born March 6; s. *Prince Mino* 1776, d. *Hayes Loyal* 5836 by *Loyal des Martins* 1818.
1515 E. N. & H. C.—H. F. PLUMPTRE, for *Cleopatra* of *Goodnestone* 5th.

Class 182.—Guernsey Heifers, calved in 1909. [3 entries, 1 absent.]

- 1518 I. (£10.)—SIR E. A. HAMBRO, *Hayes Place*, *Hayes*, Kent, for *Hayes Express* 4th 8094, fawn and white, born June 18; s. *Gay Boy* 2020, d. *Hayes Express* 3rd 7296 by *Coronation King* 1556.
1517 II. (£6.)—W. H. N. GOSCHEN, *Durrington House*, *Harlow*, for *Durrington Buttercup* 8043, red and little white, born July 11; s. *Gold Dust* of *Lilyvale* 1750, d. *Miss Lily* 10th 5582 by *Hope* of *Down Hall*.

Class 183.—Milk Yield Prizes, open to Guernsey Cows and Heifers entered in Class 180 only. [5 entries, none absent.]

- 1510 I. (£10.)—JOHN PIERPONT MORGAN, *Dover House*, *Roehampton*, Surrey, for *Trusty* 2nd 5018, fawn and white, born Dec. 24, 1900, calved May 27, 1910; s. *Aconite* 2nd 981, d. *Trusty* 5017.
1513 II. (£6.)—LADY TICHBORNE, *Tichborne Park*, *Alresford*, for *Rownhams Gloriosa* 7853, fawn and white, born Jan. 7, 1900, calved May 3, 1910, bred by Cecil F. Dixon, *Rownhams*, *Southampton*; s. *Roland* of *Seaview* 4th 1512, d. *Rose* of the *Spurs* 4th 7848 by *Lord Ovid* 1058.
1512 III. (£4.)—H. FITZWALTER PLUMPTRE, *Goodnestone Park*, *Dover*, for *Violet Des Jaonnets* 6788, light red and white, born April 27, 1901, calved Nov. 27, 1900, bred by H. E. Hutton, *St. Savioura*, *Guernsey*; s. *His Majesty* 2nd (1187) P.S., R.G.A.S., d. *Violet Des Jaonnets* (2119) F.S., R.G.A.S., by *Royal Blood* 4th 1088, P.S., R.G.A.S.
1507 E. N. & H. C.—SIR E. A. HAMBRO, for *Hayes Express*.

Kerries.¹

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.

Class 184.—Kerry Bulls, calved in 1905, 1906, 1907, or 1908.
[6 entries, none absent.]

- 1521 I. (£10, & Champion.)—LADY GREENALL, *Walton Hall*, *Warrington*, for *La Mancha Diver* 214, born March 27, 1905, bred by Mrs. Madden, *Nutley, Booterstown*, Ireland; s. *Gort Sheen* 475, d. *Daisy Colleen* (2798).
1522 II. (£6, & E. N. for Champion.)—LADY GREENALL, for *Maeldum* 223, born April 8, 1908, bred by Mrs. Madden, *Nutley, Booterstown*, Ireland; s. *Parnigan* (646), d. *Morna* 7th (3246) F.S.
1524 III. (£4.)—THOMAS WAITE, *Highlands*, *Redhill*, Surrey, for *Kilmorna Duke* 17th, born Jan. 12, 1903, bred by G. G. Mahoney, *Kilmorna*, Co. Kerry; s. *Kilmorna Duke* 9th (824), d. *Kilmorna Primrose* 2nd (3356) by *Gort Sheen* 475.
1520 E. N. & H. C.—S. J. BROWN, *Ard Caten*, *Naas*, Co. Kildare, for *Ard Caten Picture*.

¹ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

² Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 181-187.

Award of Live Stock Prizes at Liverpool, 1910. lxxxii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 185. - *Kerry Cows (in-milk), calved in or before 1906.*

[5 entries, none absent.]

- 1528 I. (£10.) - LADY GREENALL, Walton Hall, Warrington, for Fenella (1195), born May 8, 1899, calved Feb. 10, 1910, bred by the late Earl of Clonmel, Bishops-court, Ireland; s. Gort Chieftain (301), d. Bishops-court Christina 3rd (3012) by Gort Chieftain.
 1527 II. (£8.) - LADY GREENALL, for Raheny 707, born April 8, 1901, calved May 23, 1910, bred by R. Tait Robertson, Malahide, Dublin; s. Angus (108), d. Abbeyleix Patricia (2337) by Desmond (285).
 1529 III. (£4.) - R. TAIT ROBERTSON, Malahide, co. Dublin, for Duv Rosebud, born Dec. 10, calved April 22, 1910, bred by John Neil, Kiltarney, co. Kerry, s. Duv Daniel (590), d. Duv Divine (3231).

Class 186. - *Kerry Heifers (in-milk), calved in 1907.* [5 entries, 1 absent.]

- 1535 I. (£10.) - THOMAS WAITE, Highlands, Redhill, Surrey, for Maiva, born April 25, calved March 15, 1910, bred by Mrs. Madden, Nutley, Booterstown; s. La Mancha Diver 214, d. Morna 13th 1138 by Gort Sheen 475.
 1531 II. (£8.) - S. J. BROWN, Ard Oulen, Naas, co. Kildare, for Ormeau Clover (3700), born March 21, calved April 20, 1910, bred by the Earl of Shaftesbury, Bellini Castle, Belfast; s. Ormeau Droumyourke (542), d. Ormeau Mayflower (3196).
 1533 III. (£4.) - LADY GREENALL, Walton Hall, Warrington, for Walton Bashful 3rd 1044, born March 1, calved June 6, 1910; s. Walton Topazulite 168, d. Walton Bashful 872, F.S.
 1534 B. N. & H. C. - THOMAS WAITE, for Duv Deacy 2nd.

Class 187. - *Kerry Heifers, calved in 1908 or 1909.*

[3 entries, 1 absent.]

- 1537 I. (£10.) - LADY GREENALL, Walton Hall, Warrington, for Walton Jonquil 2nd 1117, born May 18, 1908; s. Walton Rover 176, d. Walton Jonquil 858 by Walton Standard Bearer 139.
 1536 B. N. & H. C. - S. J. BROWN, Ard Oulen, Naas, co. Kildare, for Ard Oulen Fenella.

Class 188. - *Milk Yield Prizes, open to Kerry Cows and Heifers entered in Classes 185 and 186 only.* [5 entries, none absent.]

- 1528 I. (£10.) - LADY GREENALL, Walton Hall, Warrington, for Walton Can-can (935) F.S., born in 1905, calved May 23, 1910, breeder unknown.
 1527 II. (£8.) - LADY GREENALL, for Raheny. (See Class 185.)
 1529 III. (£4.) - R. TAIT ROBERTSON, for Duv Rosebud. (See Class 185.)

Dexters.¹

N.B. - In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 189. - *Dexter Bulls, calved in 1906, 1907, or 1908.*

[12 entries, 8 absent.]

- 1549 I. (£10, & B.N. for Champion.²) - P. TAATFE, 95 St. George's Road, London, S.W., for Tom Thumb 542, black, born May 15, 1905, bred by George Courtney, Kenmare, co. Kerry; s. Kenmare George (471), d. Kenmare Mary Anne (1883) by Monarch (427).
 1545 II. (£8.) - H. MARTIN (HUBB) Barrow Court, near Bristol, for Barrow Captain 398, black, born July 7, 1907; s. Brockhampton Count 255, d. Barrow Agnes 2nd 1848, by Compton Dan 213.
 1548 III. (£4.) - R. TAIT ROBERTSON, Malahide, co. Dublin, for Mammoth of Marden, black, born in 1907, breeder unknown.
 1542 B. N. & H. C. - BALDOMERO DE BERTODANO, for Cowbridge Royal.

Class 190. - *Dexter Cows (in-milk), calved in or before 1906.*

[12 entries, 1 absent.]

- 1559 I. (£10, & Champion.²) - THE HON. MRS. CLAUD PORTMAN, Goldcote, Stratford-on-Avon, for La Mancha Hard to Find 1238, red, born April 8, 1904, calved May 2, 1910, bred by R. Tait Robertson, Malahide, co. Dublin; s. La Mancha What Next (279), d. La Mancha Dolly Daydream (1185) F.S.
 1560 II. (£8.) - THE HON. MRS. CLAUD PORTMAN, for Souvenir 1635 F.S., black, born in 1908, calved April 29, 1910, breeder unknown.
 1554 III. (£4.) - BALDOMERO DE BERTODANO, Cowbridge House, Malmesbury, for Cowbridge Little Eva 1583, black, born March 15, 1909, calved April 12, 1910, bred by George Courtney, Kenmare, Ireland; s. Dreen (108), d. Kenmare Norrie (1886).
 1551 B. N. & H. C. - S. J. BROWN, Ard Oulen, Naas, co. Kildare, for Duv Gnat.

¹ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

² Challenge Cup, value Twenty-five Guineas, given by the English Kerry and Dexter Cattle Society for the best animal in Classes 189-192.

lxxxii Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Class 191.—Dexter Heifers (in-milk), calved in 1907. [7 entries, 1 absent.]

- 1565 I. (£10).—H. MARTIN GIBBS, Barrow Court, near Bristol, for Barrow Duchess 3rd 1581, black, born June 1, calved May 23, 1910; s. Brockhampton Count 255, d. Barrow Duchess 2nd 1307 by Compton D. in 213.
 1568 II. (£6).—THE HON. MRS. CLAUD PORTMAN, Goldcote, Stratford-on-Avon, for La Mancha Merry Widow 1776, black, born in April, calved April 11, 1910, breeder unknown.
 1566 III. (£4).—H. MARTIN GIBBS, for Barrow Flirt, black, born in 1907, calved April 30, 1910, breeder unknown.
 1564 R. N. & H. C.—BALDOMERO DE BERTODANO, for Compton Dorothy 2nd.

Class 192.—Dexter Heifers, calved in 1908 or 1909. [11 entries, 4 absent.]

- 1572 I. (£10).—H. MARTIN GIBBS, Barrow Court, near Bristol, for Barrow Bracelet 1726 F.S., black, born in 1908, breeder unknown.
 1570 II. (£6).—THE RT. HON. SIR ERNEST CASSELL, G.O.M.G., Moulton Paddocks, Newmarket, for Moulton Peggy, black, born in 1908, breeder unknown.
 1571 III. (£4).—BALDOMERO DE BERTODANO, Cowbridge House, Malmesbury, for Cowbridge Dainty Maid 1613, black, born March 12, 1908; s. Cowbridge Kit 201, d. Cowbridge Dainty Dish 1261.
 1579 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, for La Mancha Peggy.

Class 193.—Milk Yield Prizes, open to Dexter Cows and Heifers entered in Classes 190 and 191 only. [10 entries, none absent.]

- 1564 I. (£10).—BALDOMERO DE BERTODANO, for Cowbridge Little Eva. (See Class 190.)
 1560 II. (£6).—THE HON. MRS. CLAUD PORTMAN, for Souvenir. (See Class 190.)
 1566 III. (£4).—H. MARTIN GIBBS, Barrow Court, near Bristol, for Barrow Irish Ivy 3rd 1339, black, born Nov. 15, 1905, calved April 21, 1910, bred by F. R. Lawder, Wrotington, Somerset; s. Barrow Mountaineer, d. Barrow Irish Ivy 2nd.

Dairy Cattle.

Class 194.—Dairy Cows (in-milk), over 11 cwt. live weight.¹

[7 entries, 3 absent.]

- 1586 I. (£10).—GEORGE B. NELSON, Cockerham Hall, near Garstang, for roan, age and breeder unknown, calved May 24, 1910.
 1581 II. (£6).—R. BATTY & SONS, Sefton Park and Wavertree, Liverpool, for Princess (crossbred), age unknown, calved May 27, 1910.
 1586 III. (£4).—ROBERT W. HOBBS & SONS, Kelm-cott, Lechlade, for Noblesse 27th (Shorthorn), roan, born Sept. 6, 1901, calved May 26, 1910; s. Trojan 73777, d. Noblesse 20th by Hindlip 61 62715.
 1587 R. N. & H. C.—REUBEN SHELTON, Grange Farm, Ruddington, Nottingham, for Mistress Alcock.

Class 195.—Dairy Cows (in-milk), not exceeding 11 cwt. live weight.¹

[5 entries, 2 absent.]

- 1589 I. (£10).—THOMAS CHAPMAN, 79 Tiber Street, Liverpool, for roan, age unknown, calved May 27, 1910.
 1591 II. (£6).—GEORGE B. NELSON, Cockerham Hall, near Garstang, for roan, age and breeder unknown, calved June 4, 1910.
 1588 III. (£4).—R. BATTY & SONS, Sefton Park and Wavertree, Liverpool, for Flossie (crossbred), age unknown, calved May 20, 1910.

Class 196.—Dairy Cows (in-milk or in-calf), over 11 cwt. live weight.¹

[19 entries, 5 absent.]

- 1601 I. (£7).—R. BATTY & SONS, Sefton Park and Wavertree, Liverpool, for Klondyke (crossbred), red and white, in-milk, calved June 8, 1910.
 1594 II. (£6).—JAMES & RICHARD ATKINSON, Dunbabin Farm, Wavertree, Liverpool, for Pearl, roan, born about 1904, calved June 7, 1910, breeder unknown.
 1593 III. (£3).—JAMES & RICHARD ATKINSON, for Daisy, roan, breeder unknown.
 1600 IV. (£2).—R. BATTY & SONS, for Beauty (crossbred), roan, in-calf.
 1597 V. (£1).—JAMES & RICHARD ATKINSON, for roan (crossbred), breeder unknown.
 1607 R. N. & H. C.—JAMES LISTER, SRN, Beech Farm, Eaton Road, West Derby Liverpool, for Knotty Ash Gem.

Class 197.—Dairy Cows (in-milk or in-calf), not exceeding 11 cwt. live weight.¹ [11 entries, 1 absent.]

- 1613 I. (£7).—C. E. BATEMAN, 16 Aighurth Vale, Liverpool, for Daisy (Shorthorn), roan, age and breeder unknown, in-milk, calved May 30, 1910.

¹ Prizes given by the Liverpool Local Committee.

² Prizes given by the Liverpool and District Cow Keepers' Association, and confined to Members of that Association only.

Award of Live Stock Prizes at Liverpool, 1910. lxxxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1612 II. (£5.) JAMES & RICHARD ATKINSON, Dunbabin farm, Wavertree, Liverpool, for roan, born in 1904, in calf, breeder unknown
 1618 III. (£3.) WILLIAM THOMAS DEAN, 8 Attwood Street, Anfield, Liverpool
 1616 IV. (£2.) R. BATTY & SONS, Sefton Park and Wavertree, Liverpool, for Rose (crossbred), red, in-milk, calved March 20, 1910
 1621 V. (£1.) JAMES LISTER, SEN., Beech Farm, Eaton Road, West Derby, Liverpool, for Knotty Ash Princess, roan, born in 1904, in-milk.
 1622 R. N. & H. C. - LAWRENCE MASON, 60 Chapel Road, Garston, Liverpool.

Class 198. Pairs of Dairy Cows (in-milk or in-calf), any weight, open to animals entered in Classes 196 and 197 only. [12 entries, 4 absent.]

- 1593 & 1594 I. (£6.) J. & R. ATKINSON, for Daisy and Pearl. (See Class 196.)
 1600 & 1601 II. (£5.) R. BATTY & SONS, for Beauty and Klondyke. (See Class 198.)
 1607 & 1608 III. (£3.) JAMES LISTER, SEN., Beech Farm, Eaton Road, West Derby, Liverpool, for Knotty Ash Gem (Shorthorn), roan, born Jan. 1, 1901, in-milk, calved May 29, 1910, breeder unknown; and Knotty Ash Queens (Shorthorn), roan, born June, 1903, in calf, breeder unknown.
 1613 & 1614 IV. (£2.) C. M. BATEMAN, 16 Aigburth Vale, Liverpool, for Daisy (see Class 197); and Primrose 2nd (Shorthorn), red and white, age and breeder unknown, in-milk, calved June 6, 1910.
 1602 & 1615 V. (£1.) R. BATTY & SONS, Sefton Park and Wavertree Liverpool, for Pippin (crossbred), red and white, in-milk, calved June 2, 1910; and Heather Bell (crossbred), in-milk, calved June 3, 1910.
 1598 & 1599 R. N. & H. C. - C. M. BATEMAN, for Buttercup and Primrose 1st.

Butter Tests.¹ [58 entries, 9 absent.]

Class 199a. - Cows (in-milk), of any age, breed, or cross, exceeding 900 lb. live weight.

- 1051 I. (£15.) - JOHN EVENS, for Burton Fuchsia 3rd. (See Class 108.)
 1060 II. (£10.) JOHN EVENS, for Burton Cork 6th. (See Class 108.)
 1187 III. (£5.) W. P. VOSPER, for Cowslip 5th. (See Class 130.)
 1200 R. N. & H. C. - W. & H. WHITLEY, Primley Farm, Paignton, for Handsome.

Class 199b. Cows (in milk), of any age, breed, or cross, not exceeding 900 lb. live weight.

- 1443 I. (£15. & G. M.) J. H. SMITH-BARRY, for Caprice. (See Class 177.)
 1424 II. (£10. & S. M.) JOSEPH BRUTTON, for Irish Lass. (See Class 172.)
 1444 III. (£5.) J. H. SMITH-BARRY, for Malvoise. (See Class 177.)
 1426 B. M.* MARI CADOGAN, K.G., Gullford Hall, Bury St. Edmunds, for Ghezirah.

SHEEP.

Oxford Downs.

Class 200. Oxford Down Shearling Rams. [20 entries, 3 absent.]

- 1623 I. (£10.) GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
 1638 II. (£5.) 1847 III. (£3.) & 1635 R. N. & H. C. - JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.

Class 201. Oxford Down Ram Lambs.² [9 entries, 2 absent.]

- 1640 I. (£10.) JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1647 II. (£5.) ROBERT W. HOBBS & SONS, Kulmescott, Lechlade, Glos.
 1650 III. (£3.) W. J. P. READING & SONS, Langford, Lechlade, Glos.
 1643 R. N. & H. C. - GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.

Class 202. Three Oxford Down Ram Lambs. [9 entries, 1 absent.]

- 1659 I. (£10.) - W. J. P. READING & SONS, Langford, Lechlade, Glos.
 1655 II. (£5.) - JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1657 III. (£3.) & 1656 R. N. & H. C. - ROBERT W. HOBBS & SONS, Kulmescott, Lechlade.

¹ Prizes given by the English Jersey Cattle Society.

² Gold, Silver, and Bronze Medals given by the English Jersey Cattle Society for the three Jersey animals entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the Butter Tests.

³ Prizes given by the Oxford Down Sheep Breeders' Association.

lxxxiv *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 203.—Three Oxford Down Shearling Ewes [7 entries, none absent.]

- 1666 I. (£10.) & 1666 III. (£3.)—JAMES T. HOBBS, Masey Hampton, Fairford, Glou.
1661 II. (£5.)—ALBERT BRASSKY, Heythrop Park, Chipping Norton.
1667 E. N. & H. C.—JAMES HORLICK, Cowley Manor, near Cheltenham.

Class 204. Three Oxford Down Ewe Lambs. [9 entries, 1 absent.]

- 1668 I. (£10.) & 1669 E. N. & H. C.—GEORGE ADAMS & SONS, Faringdon.
1675 II. (£5.)—W J P READING & SONS, Langford, Lechlade, Glou.
1672 III. (£3.)—JAMES T. HOBBS, Masey Hampton, Fairford, Glou.

Shropshires.¹

Class 205.—Shropshire Two-Shear Rams. [8 entries, none absent.]

- 1682 I. (£10.)—T. S. MINTON, Montford, Shrewsbury.
1680 II. (£5.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1678 III. (£3.)—RICHARD H. BIRCH, Bryn Ewryn, Colwyn Bay, for Holker Invaluable, bred by the Duke of Devonshire, Holker Hall, Cartmel in Cartmel; s. Holker Sensation, d. by Holker Royalist 12054.
1677 E. N. & H. C.—FRANK BIBBY, Hardwicke Grange, Shrewsbury.

Class 206.—Shropshire Shearling Rams. [28 entries, 3 absent.]

- 1695 I. (£10.) & 1694 III. (£3.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1685 II. (£5.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1703 IV. (£2.)—EDWARD NOOK, Harrington Hall, Shifnal.
1689 V. (£2.)—THOMAS A. BUTTAR, Corston, Coupar Angus.
1710 E. N. & H. C.—ALFRED TANNER, Shrawardine, Shrewsbury.

Class 207.—Five Shropshire Shearling Rams. [10 entries, none absent.]

- 1716 I. (£15.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1713 II. (£10.)—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1714 III. (£5.)—THOMAS A. BUTTAR, Corston, Coupar Angus.
1715 IV. (£2.)—LORD RICHARD CAVENDISH, Holker Hall, Cartmel in Cartmel; s. Holker Royalist 12054.
1719 E. N. & H. C.—T. S. MINTON, Montford, Shrewsbury.

Class 208.—Three Shropshire Shearling Rams (Novice).

[14 entries, none absent.]

- 1733 I. (£10.)—T. & S. J. SIMON, Tern Hill, Market Drayton.
1729 II. (£5.)—S. F. M. NEVETT, Yorton, Harmer Hill, Salop.
1731 III. (£3.)—CHARLES T. PULLEY, Lower Eaton, Hereford.
1730 IV. (£2.)—THOMAS PARTON, Weston Hall, Crew; s. L.D.R. 13165.
1725 E. N. & H. C.—A. N. HENDERSON, Street Ashton House, Lutterworth.

Class 209. — Three Shropshire Ram Lambs. [11 entries, none absent.]

- 1740 I. (£10.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1741 II. (£5.)—SIR WALTER CORBET, BT., Acton Reynold, Shrewsbury.
1739 III. (£3.)—F. G. CLARKE, Freeford Hall, Lichfield; s. Clirona Magistrate 13118.
1741 IV. (£2.)—EDWARD NOOK, Harrington Hall, Shifnal.
1743 E. N. & H. C.—T. S. MINTON, Montford, Shrewsbury.

Class 210. — Three Shropshire Ram Lambs (Novice).

[14 entries, none absent.]

- 1749 I. (£10.)—RICHARD H. BIRCH, Bryn Ewryn, Colwyn Bay; s. Bentley Juveniles.
1768 II. (£5.)—T. & S. J. SIMON, Tern Hill, Market Drayton.
1748 III. (£3.)—LORD BARRYMORE, Fota Island, Queenstown, Ireland.
1760 IV. (£2.)—JOHN H. N. WALKER, Ruyton Towers, Shrewsbury; s. Shenstone's Choice 12724 and Lilleshalls Pride 12641.
1712 E. N. & H. C.—KENNETH W. MILNES, Beam House, Montford Bridge.

Class 211.—Three Shropshire Shearling Ewes. [11 entries, none absent.]

- 1768 I. (£10.) & 1767 III. (£3.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1763 II. (£5.) & 1761 E. N. & H. C.—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1766 IV. (£2.)—F. G. CLARKE, Freeford Hall, Lichfield; s. Clirona Magistrate 13118.

Class 212.—Three Shropshire Ewe Lambs. [18 entries, 3 absent.]

- 1761 I. (£10.)—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1781 II. (£5.)—EDWARD NOOK, Harrington Hall, Shifnal.
1780 III. (£3.)—F. G. CLARKE, Freeford Hall, Lichfield; s. Clirona Magistrate 13118.
1762 IV. (£2.)—SIR WALTER CORBET, BT., Acton Reynold, Shrewsbury.
1763 V. (£2.)—MRS. W. F. INGE, Thorpe, Tamworth.
1786 E. N. & H. C.—T. S. MINTON, Montford, Shrewsbury.

¹ £20 towards these Prizes were given by the Shropshire Sheep Breeders' Association.

Award of Live Stock Prizes at Liverpool, 1910. LXXXV

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Southdowns.

Class 213. — *Southdown Two-Shear Rams.*¹ [13 entries, 1 absent.]

- 1794 I. (£10.) & 1795 III. (£3.) — C. R. W. ADEANE, Babraham Hall, Cambridge.
 1801 II. (£5.) — F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1803 R. N. & H. C. — DERMOT H. B. MCCALMONT, Crookfords Farm, Newmarket.

Class 214. — *Southdown Shearling Rams* [20 entries, 1 absent.]

- 1818 I. (£10. & Champion.²) — F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1807 II. (£5. & R. N. for Champion.³) 1808 III. (£3.) & 1809 IV. (£2) — C. R. W. ADEANE, Babraham Hall, Cambridge.
 1820 R. N. & H. C. — DERMOT H. B. MCCALMONT, Crookfords Farm, Newmarket.

Class 215. — *Three Southdown Shearling Rams.*¹ [9 entries, 2 absent.]

- 1837 I. (£10.) — C. R. W. ADEANE, Babraham Hall, Cambridge
 1832 II. (£5.) — F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds
 1829 III. (£3.) — SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
 1835 R. N. & H. C. — SIR JULIUS WERNHER, BT., Luton Hoe, Luton.

Class 216. — *Three Southdown Ram Lambs.* [9 entries, 1 absent.]

- 1811 I. (£10.) — F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1839 II. (£5.) — SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey
 1826 III. (£3.) — C. R. W. ADEANE, Babraham Hall, Cambridge.
 1842 R. N. & H. C. — DERMOT H. B. MCCALMONT, Crookfords Farm, Newmarket.

Class 217. — *Three Southdown Shearling Does.* [5 entries, 1 absent.]

- 1847 I. (£10. & Champion.³) — SIR JEREMIAH COLMAN, BT., Gatton Park, Surrey.
 1819 II. (£5.) — SIR JULIUS WERNHER, BT., Luton Hoe, Luton.
 1846 III. (£3.) — W. M. CAZALETT, Fairlawn, Tonbridge.
 1845 R. N. & H. C. — EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

Class 218. — *Three Southdown Doe Lambs.* [9 entries, 1 absent.]

- 1858 I. (£10. & R. N. for Champion.³) — SIR JEREMIAH COLMAN, BT., Gatton Park.
 1856 II. (£5.) — DERMOT H. B. MCCALMONT, Crookfords Farm, Newmarket.
 1852 III. (£3.) — W. M. CAZALETT, Fairlawn, Tonbridge.
 1850 R. N. & H. C. — C. R. W. ADEANE, Babraham Hall, Cambridge.

Hampshire Downs.

Class 219. *Hampshire Down Two-Shear Rams.*¹ [7 entries, none absent.]

- 1860 I. (£10.) — JAMES FLOWER, Chilmark, Salisbury.
 1862 II. (£5.) — THE EXECUTOR OF THE LATE SIR GEORGE JUDD, Osney, Barton Sincery, Hants, for Chivalrous 9105; & Fair Fighter 8274.
 1863 III. (£3.) — THE HON. MRS PLEYDELL-BOUVIER, Colechill House, Highworth, Wilts, for Colechill No. 69109, bred by the late Hon. D. Pleydell-Bouverie; & Chilton No. 898108.
 1864 R. N. & H. C. — HENRY C. STEPHENS, Cholderton Lodge, Salisbury.

Class 220. — *Hampshire Down Shearling Rams.* [15 entries, none absent.]

- 1860 I. (£10.) — HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
 1872 II. (£5.) — JAMES FLOWER, Chilmark, Salisbury.
 1868 III. (£3.) — CARY COLES, Manor House, Winterbourne Stoke, Salisbury.
 1874 R. N. & H. C. — DONALD NICOLL, Burntwood, Martyr Worthy, Winchester.

Class 221. *Hampshire Down Ram Lambs.*³ [13 entries, none absent.]

- 1868 I. (£10.) — JAMES FLOWER, Chilmark, Salisbury.
 1863 II. (£5.) — HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
 1862 III. (£3.) — THE HON. MRS PLEYDELL-BOUVIER, Colechill House, Highworth.
 1863 R. N. & H. C. — CARY COLES, Manor House, Winterbourne Stoke, Salisbury.

¹ Prizes given by the Southdown Sheep Society.

² Champion Gold Medal, given by the Southdown Sheep Society for the best Ram in Classes 213 and 214.

³ Silver Medal given by the Southdown Sheep Society for the best Pen of Does or Five Lambs in Classes 217 and 218.

⁴ Prizes given by the Hampshire Down Sheep Breeders' Association.

⁵ Prizes given through the Hampshire Down Sheep Breeders' Association.

lxxxvi *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 222.—*Three Hampshire Down Ram Lambs.*

[7 entries, none absent.]

- 1900 I. (£10, & Champion.¹)—HENRY O STEPHENS, Cholderton Lodge, Salisbury.
 1896 II. (£5, & R.N. for Champion.¹)—JAMES FLOWER, Chilmark, Salisbury.
 1899 III. (£3.)—THE HON MRS PLEYDELL BOUVERIE, Coleshill House, Highworth
 1897 R. N. & H. O.—THE EXECUTORS OF THE LATE SIR GEORGE JUDD.

Class 223.—*Three Hampshire Down Shearling Ewes.*

[6 entries, 1 absent.]

- 1903 I. (£10)—JAMES FLOWER, Chilmark, Salisbury.
 1905 II. (£5), & 1906 R. N. & H. O.—DONALD NICOLL, Burntwood, Martyr Worthy.
 1904 III. (£3.)—THE EXECUTORS OF THE LATE SIR GEORGE JUDD

Class 224.—*Three Hampshire Down Ewe Lambs.* [8 entries, none absent.]

- 1910 I. (£10.)—JAMES FLOWER, Chilmark, Salisbury.
 1914 II. (£5.)—HENRY O STEPHENS, Cholderton Lodge, Salisbury
 1913 III. (£3.)—THE HON MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth
 1911 R. N. & H. O.—THE EXECUTORS OF THE LATE SIR GEORGE JUDD

Suffolks.

Class 225.—*Suffolk Two-Shear Rams.*¹ [8 entries.]

- 1916 I. (£10), & 1917 II. (£5.)—HERBERT E SMITH, The Grange, Walton, Suffolk.
 1915 III. (£3.)—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, Essex,
 for Yeldham Grange No. 2 of 1908 10538.

Class 226.—*Suffolk Shearling Rams.* [5 entries, none absent.]

- 1919 I. (£10.)—S. R. SHERWOOD, Playford, Ipswich, for Playford General 1st 10801;
 Playford General 10104
 1921 II. (£5.)—HERBERT E. SMITH, The Grange, Walton, Suffolk.
 1918 III. (£3.)—R. L. BARCLAY, Higham, Bury St. Edmunds, for Sailor Chief 1st; s
 Higham Chief 1st 9791
 1920 R. N. & H. O.—S. R. SHERWOOD, for Playford Marksman 2nd.

Class 227.—*Suffolk Ram Lambs.*² [6 entries, 2 absent.]

- 1927 I. (£10), & 1928 III. (£3.)—HERBERT E. SMITH, The Grange, Walton, Suffolk.
 1926 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich.
 1924 R. N. & H. O.—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham.

Class 228.—*Three Suffolk Ram Lambs.* [8 entries.]

- 1931 I. (£10.)—HERBERT E SMITH, The Grange, Walton, Suffolk.
 1930 II. (£5.)—S. R. SHERWOOD, Playford, Ipswich.
 1929 III. (£3.)—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, Essex.

Class 229.—*Three Suffolk Shearling Ewes.* [2 entries.]

- 1933 I. (£10), & 1931 II. (£5.)—R. L. BARCLAY, Higham, Bury St. Edmunds.

Class 230.—*Three Suffolk Ewe Lambs.* [1 entries, 1 absent.]

- 1934 I. (£10.)—S. R. SHERWOOD, Playford, Ipswich.
 1937 II. (£5.)—HERBERT E. SMITH, The Grange, Walton, Suffolk.
 1934 III. (£3.)—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, Essex

Dorset Horn.¹

Class 231.—*Dorset Horn Shearling Rams, dropped after November 1, 1908.*

[5 entries, 1 absent.]

- 1938 I. (£10, & R. N. for Champion.¹)—W. R. FLOWER, West Stafford, Dorchester, for
 Flower's No. 138 2349; s Flower's No. 114 1694, d. by Weymouth Wrangler 1375.
 1941 II. (£5.)—FRANK J. MERSON & SON, Farmington, North Petherton, Bridgwater;
 s Crown Derby 1832, d. by Toulton No. 11 1851.
 1939 III. (£3.)—W. R. FLOWER, for Flower's Nos. 240 2351; s Flower's No. 114 1694, d. by
 Weymouth Wrangler 1375.
 1942 R. N. & H. O.—FRANK J. MERSON & SON.

¹ Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 231, 232, and 234.

² Prizes given by the Suffolk Sheep Society.

³ £18 towards these Prizes were given by the Dorset Horn Sheep Breeders' Association.

⁴ Champion Prize of £5 given by the Dorset Horn Sheep Breeders' Association for the best Ram, Pen of Lambs or Ewes in Classes 231 to 231.

Award of Live Stock Prizes at Liverpool, 1910. lxxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 232. Three Dorset Horn Ram Lambs, dropped after November 1, 1909.
[1 entries, none absent.]

1915 I. (£10. & Champion.)—SIR E. A. HAMBRO, Milton Abbey, Blandford; s. Flower's No. 21, 2250, d. by Delcombe No. 20 1803.

1915 II. (£5.) W. R. FLOWER, West Stafford, Dorchester; s. Flower's No. 201 2303, d. by Weymouth Wrangler 1375

Class 233. Three Dorset Horn Shearling Ewes, dropped after November 1, 1908. [5 entries, 1 absent.]

1950 I. (£10.) SIR E. A. HAMBRO, Milton Abbey, Blandford, s. Delcombe No. 59 2209, d. by Delcombe No. 20 1803.

1918 II. (£5.) W. R. FLOWER, West Stafford, Dorchester; s. Flower's No. 114 1691, d. by Weymouth Wrangler 1375

1951 III. (£3.) FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater; s. Crown Derby 1882, d. by Toulton No. 11 1351.

Class 234. Three Dorset Horn Ewe Lambs, dropped after November 1, 1909.
[5 entries, none absent.]

1952 I. (£10.) W. R. FLOWER, West Stafford, Dorchester; s. Flower's No. 204 2303, d. by Weymouth Wrangler 1375.

1954 II. (£5.) & 1955 III. (£3.)—SIR E. A. HAMBRO, Milton Abbey, Blandford; s. Flower's No. 215 2259, d. by Delcombe No. 20 1803.

Ryelands.²

Class 235. -Ryeland Rams, Two-Shear and upwards. [5 entries, none absent.]

1959 I. (£10.) F. M. GOUGH, The Moor, Bodenham, Leominster, for White Heather B1, born in 1907; s. Royal Lincoln.

1958 II. (£5.) HUGH A. CHRISTY, Llangoed Castle, Llysawen, Brecon, for Royal Gloucester 85A, born in 1908, bred by W. T. Barneby, Saltmarshes Castle, Bromyard; s. Jauntly 87, d. by Square Root 103.

1901 III. (£3.) D. J. THOMAS, Talachiddu, Brecon, for Two Star, born in 1907, bred by W. T. Barneby, Saltmarshes Castle, Bromyard; s. Twin Star 117, d. by Thomasine 114.

1957 R. N. & H. O. -HUGH A. CHRISTY, for Excelisior.

Class 236. -Ryeland Shearling Rams. [8 entries, 1 absent.]

1952 I. (£10.) HUGH A. CHRISTY, Llangoed Castle, Llysawen, Brecon, for rams bred by W. T. Barneby, Saltmarshes Castle, Bromyard; s. Shire Newton 93, d. by Woolmerchant 182.

1905 II. (£5.) MRS. CONSTANCE L. HERBERT, Clytha Park, Abergavenny, for Clytha Contribution; s. Saltmarshes Contribution 80A, d. by Woolmerchant 182.

1908 III. (£3.) D. J. THOMAS, Talachiddu, Brecon; s. Evesham 2nd 47, d. by Monarch 89.

1909 R. N. & H. O. -D. J. THOMAS.

Class 237. -Three Ryeland Shearling Ewes. [5 entries, none absent.]

1970 I. (£10.) HUGH A. CHRISTY, Llangoed Castle, Llysawen, Brecon, for ewes bred by W. T. Barneby, Saltmarshes Castle, Bromyard; s. Shire Newton 93 and Two Star J.

1973 II. (£5.) MRS. CONSTANCE L. HERBERT, Clytha Park, Abergavenny; s. Llysawen Hero 88 A, d. by Wulmynich Chief 128.

1972 III. (£3.) F. M. GOUGH, The Moor, Bodenham, Leominster; s. White Heather.

1971 R. N. & H. O. -HUGH A. CHRISTY.

Kerry Hill (Wales).³

Class 238. -Kerry Hill (Wales) Rams, Two-Shear and Upwards.

[5 entries, none absent.]

1970 I. (£10.)—WILLIAM ALDERSON, Glanmehell, Kerry, Newtown, Mont., for Pentrenant Diamond, born in 1908, bred by W. Davies, Pentrenant, Churchstoke; s. Penygelly Orphan 1774, d. by Pentrenant Perfect.

1977 II. (£5.) -F. R. KINGET, Wimbury, Chirbury, Salop, for Penygelly Balfour 2510, born in 1907, bred by John Venables, Penygelly, Kerry, Newtown, Montgomery.

1978 III. (£3.)—LORD HARLEIGH, Brogyntyn, Oswestry, for Brogyntyn Charles 2287, born in 1908; s. Brogyntyn Bendigo 1855, d. by Bagdon Record 676.

1979 R. N. & H. O.—THE DUKE OF WESTMINSTER, for Great Weston Corporal.

¹ Champion Prize of £5 given by the Dorset Horn Sheep Breeders' Association for the best Ram, Pen of Lambs or Ewes in Classes 231 to 234.

² £18 towards these Prizes were given by the Ryeland Flock Book Society.

³ £26 towards these Prizes were given by the Kerry Hill (Wales) Flock Book Society.

lxxxviii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 239.--Kerry Hill (Wales) Shearling Rams. [1 entries, 1 absent.]

- 1882 I. (£10.) LORD HARLECH, Brogyntyn, Oswestry, for Brogyntyn Darius; s. Brogyntyn Bendigo 1875, d. by Protector 924.
1883 II. (£5.) THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Eaton Active s. Great Weston Corporal 1881, d. by Gwernygog Blewance 603.
1889 III. (£3.) WILLIAM ALDERSON, Glanmelheli, Kerry, Newtown, Mont.; Gwernygog Rinnig, 1367, d. by Gontro Standwell.

Class 240.--Three Kerry Hill (Wales) Shearling Ewes.

[5 entries, 1 absent.]

- 1885 I. (£10.) LORD HARLECH, Brogyntyn, Oswestry; s. Gwernygog Giant 2382.
1888 II. (£5.) THE DUKE OF WESTMINSTER, Eaton Hall, Chester; s. Great Weston Corporal 1894, d. by Penygelly Stamp 9121 and Llynudoc.
1889 III. (£3.) T. E. KINSEY, Winsbury, Chirbury, Salop; s. Penygelly Balfour 2510, d. by Bahallion Combination 512.
1887 R. N. & H. O. ROWLAND MORRIS, Glanraion Farm, Llanilar, Cardiganshire.

Class 241.--Three Kerry Hill (Wales) Breeding Ewes, having each reared a lamb in 1910. [3 entries]

- 1890 I. (£10.) T. E. KINSEY, Winsbury, Chirbury, Salop for ewes born in 1897; s. Bahallion Combination 512, d. by Ragdon Record 876.
1889 II. (£5.) LORD HARLECH, Brogyntyn, Oswestry, for ewes born in 1898; s. Brogyntyn Bendigo 1875.
1891 III. (£3.) CHARLES W. HANDLES, Sutton Lodge, Great Sutton, Chester, for ewes born in 1904, bred by John Morris, Gwernygog, Barn, Kerry.

Lincolns.¹

Class 242.--Lincoln Two-Shear Rams. [6 entries, 1 absent.]

- 1893 I. (£10. & Champion.) TOM CASSWELL, Pointon House, Folkingham for Pointon Vulcan 11416; s. Pointon Cracker 3rd 9881, d. by Cracker 2nd 2546.
1896 II. (£5.) HENRY DUDDING, Riby Grove, Great Grimby, for Riby Nocton Enterprise 3rd 11462; s. Nocton Enterprise 9820.
1897 III. (£3.) JOHN PEARS, Mere, near Lincoln, for Mere Crack 11816; s. Riby Bridlington 9717.
1892 R. N. & H. O. TOM CASSWELL, for Pointon Chancellor.

Class 243.--Lincoln Shearling Rams. [15 entries, none absent.]

- 2007 I. (£10. R. N. for Champion.) & 2008 III. (£3.) HENRY DUDDING, Riby Grove, Great Grimby.
2009 II. (£5.) CHARLES H. HOWARD, Nocton Rise, Lincoln.
2000 R. N. & H. O. TOM CASSWELL, Pointon House, Folkingham.
2007, 2031 (Bowl.) HENRY DUDDING.
2002, 2040 (R. N. for Bowl.) S. E. DEAN & SONS.

Class 244.--Five Lincoln Shearling Rams. [8 entries, 1 absent.]

- 2018 I. (£15.) HENRY DUDDING, Riby Grove, Great Grimby.
2019 II. (£10.) CHARLES H. HOWARD, Nocton Rise, Lincoln.
2014 III. (£5.) TOM CASSWELL, Pointon House, Folkingham.
2016 R. N. & H. O. ROBERT DIXON, Barff House, Brandesburton, Hull.

Class 245.--Three Lincoln Ram Lambs. [7 entries, none absent.]

- 2021 I. (£10.) S. E. DEAN & SONS, Dowby Hall, Bourne.
2026 II. (£5.) CHARLES H. HOWARD, Nocton Rise, Lincoln.
2023 III. (£3.) ROBERT DIXON, Barff House, Brandesburton, Hull.
2025 R. N. & H. O. HENRY DUDDING, Riby Grove, Great Grimby.

Class 246. Three Lincoln Shearling Ewes. [5 entries, 1 absent.]

- 2031 I. (£10. & Bowl.) HENRY DUDDING, Riby Grove, Great Grimby.
2032 II. (£5.) CHARLES H. HOWARD, Nocton Rise, Lincoln.
2028 III. (£3.) S. E. DEAN & SONS, Dowby Hall, Bourne.
2029 R. N. & H. O. ROBERT DIXON, Barff House, Brandesburton, Hull.

¹ £86 towards these Prizes were given by the Lincoln Long-Wool Sheep Breeders' Association.

² Piece of Plate, value £5, given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 242 and 243.

³ Challenge Bowl, value Fifty Guineas, given through the Lincoln Long-Wool Sheep Breeders' Association for the best group of one Ram and three Ewes, bred by Exhibitor, in Classes 242, 243, 245, and 246.

Award of Live Stock Prizes at Liverpool, 1910. lxxxix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 247. *Three Lincoln Bone Lambs.* [6 entries, 2 absent.]

- 2037 I. (£10.) HENRY DUBDING, Riby Grove, Great Grimsby.
 2034 II. (£5.) & 2036 III. (£3.) S. M. DEAN & SONS, Dowby Hall, Bourne.
 2038 R. N. & H. C. ROBERT DIXON, Birt House, Brandeburton, Hull.

Class 248. *Three Lincoln Yearling Does, in wool.* [5 entries, 1 absent.]

- 2040 I. (£10.) S. M. DEAN & SONS, Dowby Hall, Bourne.
 2043 II. (£5.) WILLIAM B. SWALLOW, Woolton Lawn, Ulceby, Lincs.
 2041 III. (£3.) HENRY DUBDING, Riby Grove, Great Grimsby.
 2039 R. N. & H. C. CAPT OLIVE BIEREN, Swinton Grange, Malton.

Leicesters.¹

Class 249. *-Leicester Shearling Rams.* [9 entries, 1 absent.]

- 2045 I. (£10.) GEORGE HARRISON, Gainford Hall, Darlington.
 2050 II. (£5.) & 2049 R. N. & H. C. - F. F. JORDAN, Eastburn, Driffield.

Class 250. *Three Leicester Ram Lambs.* [3 entries.]

- 2055 I. (£10.) J. H. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.
 2054 II. (£5.) GEORGE HARRISON, Gainford Hall, Darlington.
 2053 R. N. & H. C. - JOHN CRANWICK, Field House, Hunmanby, Yorks.

Class 251. *Three Leicester Shearling Does.* [5 entries, none absent.]

- 2050 I. (£10.) & 2050 R. N. & H. C. - F. F. JORDAN, Eastburn, Driffield.
 2051 II. (£5.) J. H. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.

Class 252. *Three Leicester Five Lambs.* [4 entries, none absent.]

- 2054 I. (£10.) & 2053 R. N. & H. C. GEORGE HARRISON, Gainford Hall, Darlington.
 2055 II. (£5.) J. H. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.

Border Leicesters.²

Class 253. *Border Leicester Rams, Two-Shear and upwards.*

[6 entries, 1 absent.]

- 2066 I. (£10, & Champion.³) THE RT. HON. A. J. BALFOUR, M.P., Whittingehame, Prestonkirk, for Deuchrie Pride 2370, born in 1907, bred by James Jeffrey, Deuchrie, Prestonkirk; a Patriotic Brilliant 1684, d. by Dandy Jim 824.
 2071 II. (£5.) J. & J. R. C. SMITH, Galahaw, Kelso, for St. Onthbert 2053, born in 1908, bred by John Mark, Nunnyside, Prestonkirk.
 2070 III. (£3.) THE SCREMERSTON COAL CO. LTD., Heathery Tops, Scremerston, Berwick-on-Tweed, for King Cole 2528, born in 1907, bred by W. S. Bell, East Fortoun, Drom; a Fortoun Bairdwell 1688, d. by Fortoun Little Known 1042.
 2068 R. N. & H. C. J. & J. CALDER, Ardargie, Forquardenny, Perth, for Ardargie Prince.

Class 254. *Border Leicester Shearling Rams.* [14 entries, 2 absent.]

- 2068 I. (£10, & R. N. for Champion³), & 2081 R. N. & H. C. J. & J. R. C. SMITH, Galahaw, Kelso.
 2078 II. (£5.) WILLIAM ROBSON, Low Hedgeley, Alnwick; a Hedgeley Duke 2814.
 2076 III. (£3.) - JAMES FINDLAY, Newmill of Ormsgassie, Forfar.

Class 255. *-Border Leicester Shearling Does.* [11 entries, 2 absent.]

- 2065 I. (£10.) & 2080 R. N. & H. C. J. & J. R. C. SMITH, Galahaw, Kelso.
 2080 II. (£5.) JAMES FINDLAY, Newmill of Ormsgassie, Forfar.
 2086 III. (£3.) THE RT. HON. A. J. BALFOUR, M.P., Whittingehame, Prestonkirk.

Wensleydales.⁴

Class 256. *-Wensleydale Rams, Two-Shear and upwards.*

[5 entries, none absent.]

- 2101 I. (£10.) - THE ESTATE OF THE LATE THOMAS WILLIS, Manor House, Carperby, Yorks., for Royal Gloucester, born in 1908, bred by William Rhodes, Lundholme, Kirby Lonsdale; a Lending Blue 1256.

¹ £15 towards these Prizes were given by the Leicester Sheep Breeders' Association.
² £15 towards these Prizes were given by the Society of Border Leicester Sheep Breeders.

³ Perpetual Challenge Cup, value Sixty Guineas, given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 253-255.

⁴ £15 towards these Prizes were given by the Wensleydale Blue-faced Sheep Breeders' Association and Flock Book Society, and £15 by the Wensleydale Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2089 II. (£5.)—**R. CHESTER**, Low Moor Farm, Ripon, for **Marton Prince**, born in 1907; s. Towers 1286, d. by Royal London 001.
 2100 III. (£3.)—**EDWARD HORSEMAN**, Broken Brea Farm, Richmond, Yorks., for **Park Royal 3rd 1280**, born in 1908; s. Park Royal 2nd 1145, d. by Donovan 007.
 2097 R. N. & H. C.—**LORD HENRY BENTINCK**, M.P., for **Lucky Prince**.

Class 257.—Wensleydale Shearling Rams. [7 entries, none absent.]

- 2108 I. (£10.)—**THE EXORS. OF THE LATE THOMAS WILLIS**, Manor House, Carperby; s. Royal Derby 1174.
 2105 II. (£5.)—**WILLIAM DINSDALE**, Low Bolton, Redmire, Yorks., for **Leading Standard**, bred by W. Rhodes, Lundholme, Kirkby Lonsdale; s. Leading Blue 1250, d. by Torking 1079.
 2102 III. (£3.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale, for **Coming Blue**; s. Leading Blue 1236, d. by Prince of Blue 973.
 2108 R. N. & H. C.—**LORD HENRY BENTINCK**, M.P., for **Hindson's Blue**.

Class 258.—Three Wensleydale Shearling Rams. [3 entries.]

- 2109 I. (£10.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale for **Blue Willy**, **Conquering Blue**, and **Prince Bertie**, bred by W. Rhodes, Lundholme, Kirkby Lonsdale; s. Blue Berne 1314, ds. by Prince of Blue 973, Blue Prince 855, and Lanwlad 2nd 830.
 2111 II. (£5.)—**THE EXORS. OF THE LATE THOMAS WILLIS**, Manor House, Carperby; s. Royal Derby 1174.
 2110 III. (£3.)—**R. CHESTER**, Low Moor Farm, Ripon; s. Bolton Prince 1220, ds. by Towers and Shepherd's Delight.

Class 259.—Three Wensleydale Ram Lambs. [4 entries, 1 absent.]

- 2112 I. (£10.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale; ss. Westmorland Blue 1300, Princess Pride 1371, and Blue Bertie 1314, ds. by Prince of Blue 973, Bluebeard 007, and Leading Blue 1250.
 2114 II. (£5.)—**R. CHESTER**, Low Moor Farm, Ripon; ss. Marton Prince and Bolton Prince 1220, ds. by Marton King and Royal London.
 2113 III. (£3.)—**LORD HENRY BENTINCK**, M.P.; ss. Westhouse Fashion 1402, Westmorland Blue 1300, and Princess Pride 1371, ds. by Prince of Blue 973, King of Blues 1041, and Leading Blue 1250.

Class 260.—Three Wensleydale Shearling Woes. [5 entries, none absent.]

- 2120 I. (£10.)—**THE EXORS. OF THE LATE THOMAS WILLIS**, Manor House, Carperby; s. Royal Derby 1174.
 2116 II. (£5.)—**LORD HENRY BENTINCK**, M.P., Underley Hall, Kirkby Lonsdale; ss. Lucky Jim 1045 and Leading Blue 1250, ds. by Prince of Blue 973, Blue Hero 854, and Moors Blue 890.
 2117 III. (£3.)—**LORD HENRY BENTINCK**, M.P.; s. Leading Blue 1250, ds. by King of Blues 1041 and Prince of Blue 973.
 2118 R. N. & H. C.—**EDWARD HORSEMAN**, Broken Brea Farm, Richmond, Yorks.

Lonks.¹

Class 261.—Lonk Rams, Shearling and upwards. [3 entries.]

- 2122 I. (£10.)—**DAVID HAGUE**, Copy Nook, near Clitheroe, for **Copy Nook Specimen 171**, born in 1908; s. Worsthorne Wonder 64, d. Greenthorn Queen.
 2123 II. (£5.)—**EDWARD SMITH**, Summerhouse Farm, Cowling, near Kelghley, for **Jimmy**, born in 1907, bred by James Hardisty, Addingham, Leeds.
 2121 III. (£3.)—**DAVID HAGUE**, for **Copy Nook King**, born in 1909; s. Worsthorne Wonder 64, d. Daisy.

Class 262.—Lonk Ram Lambs. [3 entries.]

- 2125 I. (£10.)—**DAVID HAGUE**, Copy Nook, near Clitheroe, for **Copy Nook Specimen 2nd** s. Copy Nook Specimen 172, d. Mountain Queen.
 2126 II. (£5.)—**WHITTAM & ORMEROD**, Hurstwood Hall, Hurstwood, near Burnley, for **Bank Note 3rd**; s. Bank Note 2nd.
 2124 III. (£3.)—**DAVID HAGUE**, for **Billy**; s. Worsthorne Wonder 64, d. Mountain Lass.

Class 263.—Three Lonk Shearling Woes. [3 entries.]

- 2128 I. (£10.)—**DAVID HAGUE**, Copy Nook, near Clitheroe; s. Copy Nook Specimen 172.
 2127 II. (£5.)—**DAVID HAGUE**; s. Worsthorne Wonder 64.
 2129 III. (£3.)—**EDWARD SMITH**, Summerhouse Farm, Cowling, near Kelghley, for ewes bred by John Blackburn, Barker House Road, Nelson.

Class 264.—Three Lonk Ewe Lambs. [2 entries.]

- 2130 I. (£10.)—**DAVID HAGUE**, Copy Nook, near Clitheroe; s. Copy Nook Specimen 172.
 2131 II. (£5.)—**WHITTAM & ORMEROD**, Hurstwood Hall, Hurstwood, near Burnley; s. Bank Note 2nd.

¹ £25 towards these Prizes were given by the Lonk Sheep Breeders' Association.

Award of Live Stock Prizes at Liverpool, 1910. xci

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Derbyshire Gritstones.¹

Class 265. *Derbyshire Gritstone Rams, Two-Shear and upwards*

[6 entries, none absent.]

- 2134 I. (£10.) C. H. BOWMAN, Harewood Grange, Holymoorside, Chesterfield, for Harewood Lion 31, born in 1906
 2132 II. (£5.) C. H. BOWMAN, for Harewood Devonshire 27, born in 1905
 2137 III. (£3.) DANIEL C. WHEELTON, Lower Nabs Farm, Wincle, Macclesfield, for Goytdale Ranger 18, born in 1906, bred by William Trueman, Goyts Bridge Buxton.
 2135 R. N. & H. C. -THE EARL OF DERBY, for Ollerenshaw Jim.

Class 266. *Derbyshire Gritstone Shearling Rams.* [3 entries]

- 2140 I. (£10.) -THE EARL OF DERBY, Clough House, Wildboardclough, Macclesfield, for Goytdale Rook 127, bred by W. Trueman, Goyts Bridge, Buxton; s Goytdale Traveller 20 d Goytdale No. 56
 2139 II. (£5.) -C. H. BOWMAN, Harewood Grange, Holymoorside, Chesterfield, for Harewood Jerry 136; s Harewood Devonshire 27, d Harewood No. 2
 2138 III. (£3.) -C. H. BOWMAN, for Harewood Baumber 132; s Harewood Devonshire 27, d, Harewood No. 92

Class 267. *Three Derbyshire Gritstone Shearling Ewes.*

[5 entries, none absent.]

- 2145 I. (£10.) DANIEL C. WHEELTON, Lower Nabs Farm, Wincle, Macclesfield, for Nabs Nos. 324 1921, 344 1931, and 360 1947 s. Goytdale Ranger 18 and Errwood Rambler, d. Nabs Nos 143, 148, and 156.
 2144 II. (£5.) THE EARL OF DERBY, Clough House, Wildboardclough, Macclesfield; s Gray Premier 6
 2141 III. (£3.) C. H. BOWMAN, Harewood Grange, Holymoorside, Chesterfield, for Harewood Nos. 292 1815, 310 1813, and 312 1835; s. Harewood Devonshire 27 and Harewood Baden 23 d. Harewood Nos. 16, 53, and 86.

Kent or Romney Marsh.²

Class 268. —*Kent or Romney Marsh Two-Shear Rams.*

[12 entries, 1 absent.]

- 2146 I. (£10, & Champion s), & 2149 R. N. & H. C. CHARLES FILE, Elham, Canterbury.
 2146 II. (£5, & R. N. for Champion s), & 2147 III. (£3.) GEORGE FARMER, Leeds Abbey, Maidstone.

Class 269. —*Kent or Romney Marsh Shearling Rams.*

[27 entries, 4 absent.]

- 2166 I. (£10), & 2164 IV. (£2.) CHARLES FILE, Elham, Canterbury.
 2158 II. (£5.) W. M. CAZALEF, Fairlawn, Tonbridge.
 2172 III. (£3.) ROBERT KENWARD, Udimore, Rye, Sussex; s. Rigden 77 of 1905 17356.
 2162 R. N. & H. C. GEORGE FARMER, Leeds Abbey, Maidstone

Class 270. —*Five Kent or Romney Marsh Shearling Rams.*

[8 entries, none absent.]

- 2190 I. (£10.) WILLIAM MILLEN, Syndale Valley, Faversham.
 2187 II. (£10.) -CHARLES FILE, Elham, Canterbury.
 2191 III. (£5.) -J. EGERTON QUESTED, The Firs, Charlton, Kent.
 2188 R. N. & H. C. L. H. & G. W. FINN, Westwood Court, Faversham.

Class 271. *Three Kent or Romney Marsh Ram Lambs.*

[13 entries, 1 absent.]

- 2204 I. (£10.) -J. EGERTON QUESTED, The Firs, Charlton, Kent.
 2201 II. (£5.) -J. BARNBY PALMER, New Shelve Manor, Lenham, Maidstone.
 2198 III. (£3.) -A. J. HICKMAN, Court Lodge, Egerton, Kent.
 2205 R. N. & H. C. -WILLIAM RENDALL, Hempton Lodge, near Hythe.

¹ £37 towards these Prizes were given by the Derbyshire Gritstone Sheep Breeders' Society.

² £48 towards these Prizes were given by the Kent or Romney Marsh Sheep Breeders' Association.

³ Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 268 and 269.

xcii *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 272.—Three Kent or Romney Marsh Shearling Ewes. [11 entries, 2 absent.]

- 2208 I. (£10).—CHARLES FILE, Elham, Canterbury.
2213 II. (£5).—J. BANBURY PALMER, New Shelve Manor, Latham, Maidstone.
2213 III. (£3).—FREDERICK NRAMÉ, Macknade, Faversham.
2210 IV. (£2).—A. J. HICKMAN, Court Lodge, Egerton, Kent.
2207 R. N. & H. C.—GEORGE FARMER, Leeds Abbey, Maidstone

Class 273.—Three Kent or Romney Marsh Ewe Lambs. [12 entries, none absent.]

- 2238 I. (£10).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
2232 II. (£5).—A. J. HICKMAN, Court Lodge, Egerton, Kent.
2219 III. (£3).—CHARLES FILE, Elham, Canterbury.
2217 R. N. & H. C.—W. M. CAZALET, Fairlawn, Tonbridge.

Cotswolds.¹

Class 274.—Cotswold Shearling Rams. [9 entries, none absent.]

- 2232 I. (£10).—WILLIAM HOULTON, Broadfield Farm, Northleach, Glos.
2229 II. (£5), & 2230 III. (£3).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.
2234 R. N. & H. C.—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.

Class 275.—Three Cotswold Ewe Lambs. [6 entries, none absent.]

- 2238 I. (£10), & 2239 II. (£5).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.
2242 III. (£3).—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.
2241 R. N. & H. C.—MADDY & NEWMAN, Cold Aston, Bourton-on-the-Water, Glos.

Class 276.—Three Cotswold Shearling Ewes. [8 entries, 1 absent.]

- 2246 I. (£10), & 2247 II. (£5).—WILLIAM HOULTON, Broadfield Farm, Northleach, Glos.
2248 III. (£3).—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.
2244 R. N. & H. C.—W. T. GARNE & SON, Aldsworth, Northleach, Glos.

Class 277.—Three Cotswold Ewe Lambs. [6 entries, 1 absent.]

- 2252 I. (£10), & 2253 II. (£5).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.
2256 III. (£3).—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.
2255 R. N. & H. C.—MADDY & NEWMAN, Cold Aston, Bourton-on-the-Water, Glos.

Devon Long-Wools.²

Class 278.—Devon Long-Wool Rams, Two-Shear and upwards. [1 entry.]

- 2258 I. (£10).—FREDERICK WHITE, Torweston, Williton, Somerset, for ram, born 1908.

Class 279.—Devon Long-Wool Shearling Rams. [2 entries.]

- 2259 I. (£10), & 2260 II. (£5) FREDERICK WHITE, Torweston, Williton, Somerset.

Class 280.—Three Devon Long-Wool Shearling Ewes. [2 entries]

- 2261 I. (£10), & 2262 II. (£5.) FREDERICK WHITE, Torweston, Williton, Somerset.

South Devons.³

Class 281.—South Devon Two-Shear Rams. [3 entries.]

- 2265 I. (£10).—F. J. WINTER, Keynecote Barton, Kingsbridge, Devon, for Wintle's No. 7 of 1908 4579; & Wintle's No. 13 of 1908 2862.
2264 II. (£5).—JOHN STOOKE, Sherford, Brixton, Plymouth, for ram, bred by Edward Stooke, Coleridge, Kingsbridge.
2263 R. N. & H. C.—JOHN S. HALLETT, Sherford, Brixton, Plymouth.

Class 282.—South Devon Shearling Rams. [6 entries, none absent.]

- 2269 I. (£10).—EDWARD H. HOSKIN, Cartuther Barton, Liskeard, Cornwall, for Hoskin's No. 1 of 1909; & Wintle's No. 13 of 1908 2862.
2268 II. (£5).—PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall, for Tremadart No. 4; & Fairweather's No. 2 of 1906 1942, d. by Navery's No. 2.
2270 R. N. & H. C.—JOHN STOOKE, Sherford, Brixton, Plymouth.

¹ £25 towards these Prizes were given by the Cotswold Sheep Society.

² £15 towards these Prizes were given by the Devon Long-Woolled Sheep Breeders' Society.

³ £30 towards these Prizes were given by the South Devon Flock Book Association.

Award of Live Stock Prizes at Liverpool, 1910. xciii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 283. — Three South Devon Ram Lambs. [1 entries, none absent.]

- 2273 I. (£10.) JOHN S. HATLETT, Sherford, Brixton, Plymouth.
 2272 II. (£5.) PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall, for Tremadart Nos 1, 2, and 3, & Fairweather's No 2 of 1905 1912, & by Bobey's No. 2.
 2274 R. N. & H. O. JOHN SPOOKE, Sherford, Brixton, Plymouth.

Class 284. — Three South Devon Shearling Ewes. [2 entries.]

- 2276 I. (£10.) JOHN SPOOKE, Sherford, Brixton, Plymouth.
 2277 II. (£5.) — R. B. TRANT, Treggill, Menheniot, Liskeard, Cornwall.

Class 285. — Three South Devon Ewe Lambs. [4 entries, none absent.]

- 2279 I. (£10.) — JOHN S. HATLETT, Sherford, Brixton, Plymouth.
 2278 II. (£5.) — PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall; & Fairweather's No 2 of 1905 1912, & by Savery's No 2.
 2281 R. N. & H. O. — R. B. TRANT, Treggill, Menheniot, Liskeard, Cornwall.

Dartmoors.¹

Class 286. — Dartmoor Rams, Two-Shear and upwards. [8 entries.]

- 2282 I. (£10.) JOHN R. T. KINGWELL, Great Aish, South Brent, Devon, for Royal Champion, born in 1908, bred by R. S. Luscombe, Cornwood, Devon.
 2284 II. (£5.) WILLIAM WOTTON, Fardle Barton, Ivybridge, Devon, for The Squire & Co. born in 1907, bred by E. P. Northey, Higher Bowden, Okehampton.
 2283 III. (£3.) JOHN WILLIAMS, Anderton, Tavistock, Devon, for Anderton Lad 44, born in 1908.

Class 287. — Dartmoor Shearling Rams. [7 entries, none absent.]

- 2286 I. (£10.) E. P. NORTHEY, Higher Bowden, Okehampton, Devon.
 2287 II. (£5.) R. S. LUSCOMBE, Windorne, Cornwood; & Venton, & by Bowden Lad.
 2288 III. (£3.) — JOHN R. T. KINGWELL, Great Aish, South Brent, Devon; & Gay Lad.

Class 288. — Three Dartmoor Shearling Ewes. [5 entries, none absent.]

- 2289 I. (£10.) — WILLIAM ROWSE, Okehampton, Devon.
 2295 II. (£5.) JOHN R. T. KINGWELL, Great Aish, South Brent, Devon; & Gay Lad.
 2293 III. (£3.) — FRANK W. ORREBER, Trewint, Menheniot, Liskeard, for ewes, bred by John Greber & Sons, Trewint; & Trewint Tip Top.

Exmoors.²

Class 289. — Exmoor Rams, Two-Shear and upwards. [5 entries, 1 absent.]

- 2299 I. (£10.) RICHARD R. ROTHWELL, Morebath Manor, Bampton, Devon, for Broford Mystery 289, born in 1908, bred by Percy Smyth, Broford, Dulverton; & Leigh Model 87.
 2300 II. (£5.) — D. J. TAPP, Highercombe, Dulverton, for ram, born in 1908, bred by Capt. Mildmay, Dulverton.
 2301 III. (£3.) — D. J. TAPP, for ram, born in 1908.
 2298 R. N. & H. O. — JOHN ROBINS, Lidcot Hall, High Bray, for Lidcot 4.

Class 290. — Exmoor Shearling Rams [6 entries, 1 absent.]

- 2303 I. (£10.) JOHN ROBINS, Lidcot Hall, High Bray, South Molton, for Lidcot 6.
 2300 II. (£5.) ALLAN C. YOUNG, Watergate House, Bulford, Wilts., for Bulford No. 1; & Leigh Model 87.
 2304 III. (£3.) RICHARD R. ROTHWELL, Morebath Manor, Bampton, Devon, for Leyton No. 8; & Combination 88.
 2302 R. N. & H. O. — T. C. PEARSE, Leigh, Dulverton, Somerset, for Leigh No. 17.

Class 291. — Three Exmoor Shearling Ewes. [7 entries, none absent.]

- 2312 I. (£10.) PERCY SMYTH, Broford, Dulverton, Somerset; & Triscombe Dunster 83.
 2308 II. (£5.) JOHN ROBINS, Lidcot Hall, High Bray, South Molton, Devon.
 2313 III. (£3.) ALLAN C. YOUNG, Watergate House, Bulford, Wilts., & Leigh Model 87.
 2310 R. N. & H. O. RICHARD R. ROTHWELL, Morebath Manor, Bampton, Devon.

Cheviots.³

Class 292. — Cheviot Rams, Two-Shear and upwards.

[4 entries, none absent.]

- 2315 I. (£10.) & 2316 II. (£5.) — JACOB ROBSON, Byrness, Otterburn, Northumberland, for rams born in 1908.
 2317 R. N. & H. O. — JOHN ROBSON, Newton, Bellingham, Northumberland.

¹ £18 towards these Prizes were given by the Dartmoor Sheep Breeders' Association.

² £18 towards these Prizes were given by the Exmoor Horn Sheep Breeders' Society.

³ £15 towards these Prizes were given by the Cheviot Sheep Society.

xciv *Award of Live Stock Prizes at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 293.—*Cheviot Shearling Rams.* [3 entries, none absent.]

- 2321 I. (£10).—JOHN ROBSON, Newton, Bellingham, Northumberland.
2319 II. (£5).—JACOB ROBSON, Byrness, Otterburn, Northumberland.

Class 294.—*Cheviot Shearling Ewes.* [4 entries, none absent.]

- 2324 I. (£10).—JOHN ROBSON, Newton, Bellingham, Northumberland.
2322 II. (£5), & 2323 III. (£3).—JACOB ROBSON, Byrness, Otterburn, Northumberland

Herdwicks.¹

Class 295.—*Herdwick Rams, Two Shear and upwards.*

[5 entries, none absent.]

- 2320 I. (£10).—S D STANLEY-DODGSON, Tarnbank, Cockermouth, for Blakesfell, born in 1907, bred by William Abbott, Mockerkim, Cockermouth.
2320 II. (£5).—JAMES TODD, Rougholme, Waberthwaite, Cumberland, for Johnnie, born in 1908.
2327 R. N. & H. C.—THE EARL OF LONSDALE, Whitehaven Castle, for Pillar Rock

Class 296.—*Herdwick Shearling Rams.* [3 entries.]

- 2332 I. (£10).—JAMES TODD, Rougholme, Waberthwaite, Cumberland, for Blue Boy.
2323 II. (£5).—JAMES TODD, for Bright Eyes.
2331 R. N. & H. C.—S D STANLEY-DODGSON, Tarnbank, Cockermouth.

Class 297.—*Three Herdwick Shearling Ewes.* [4 entries, none absent.]

- 2336 I. (£10), & 2337 II. (£5).—JAMES TODD, Rougholme, Waberthwaite, Cumberland.
2325 R. N. & H. C.—THE EARL OF LONSDALE, Whitehaven Castle, Cumberland.

Welsh Mountain.²

Class 298.—*Welsh Mountain Rams, Two Shear and upwards.*

[12 entries, 2 absent.]

- 2344 I. (£10).—OWEN PRICE, Nantyrharn, Cray, for Twm Shon Dafydd 4th 830, born in 1907; s. Twm Shon Dafydd 3rd 128, d. by Twm or Nant.
2348 II. (£5).—MRS. M. E. WYNNE-FINCH, Voelas, Bettws-y-coed, for Voelas Dei 346, born in 1908; s. Voelas Gwerclas 261, d. by Gwerclas 1st.
2347 III. (£3).—THOMAS WILLIAMS, Llewesog Hall, Denbigh, for Cymro 4th, born 1906; s. Cymro 2nd.
2338 R. N. & H. C.—J. MARSHALL DUGDALE, Llwyn, Llanfyllin, for Llyw Gwrnedd.

Class 299.—*Welsh Mountain Shearling Rams.* [11 entries, 1 absent.]

- 2350 I. (£10).—MRS. M. E. WYNNE-FINCH, Voelas, Bettws-y-coed, for Voelas Bill; s. Gwerclas 261, d. No. 4 by Gwerclas 1st.
2351 II. (£5).—ROBERT R. JONES, Hafod, Corwen, for Twm, bred by R. W. Pritchard, Coedmarian, Carnarvon.
2357 III. (£3).—OWEN PRICE, Nantyrharn, Cray, for Nantyrharn Tywysog; s. Llywrog 2nd 291 by Twm Shon Dafydd 3rd 126.

- 2354 R. N. & H. C.—THOMAS JONES, Hafodwen, Llanfihangel G. M., Corwen, for Hero.

Class 300.—*Three Welsh Mountain Shearling Ewes.* [10 entries, 1 absent.]

- 2302 I. (£10).—ROBERT R. JONES, Hafod, Corwen; s. Hafod Dafydd 86.
2361 II. (£5, & Champion.³).—JOHN DRIFTHAM (HATTON, Fryd Farm, Abergale.
2368 III. (£3, & R. N. for Champion.³).—W. G. ROBERTS, Dyserth Hall, Dyserth, Flint; s. John Llewellyn, d. by Hero
2308 R. N. & H. C.—THOMAS WILLIAMS, Llewesog Hall, Denbigh

Black-faced Mountain.⁴

Class 301.—*Black-faced Mountain Rams, Shearling and upwards.*

[6 entries, none absent.]

- 2375 I. (£10).—JOHN ROBSON, Newton, Bellingham, for Sir Matthew, born in 1906, bred by M. G. Hamilton, Woolfords, Cobbinshaw.
2373 II. (£5).—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, Co. Durham, for Sir Henry, born in 1908, bred by M. G. Hamilton, Woolfords, Cobbinshaw.
2374 R. N. & H. C.—JOHN ROBSON.

¹ £15 towards these Prizes were given by Breeders of Herdwick Sheep.

² £15 towards these Prizes were given by the Welsh Mountain Flock Book Society.

³ Silver Cup, value £5 7s., given by the Denbighshire and Flintshire Agricultural Society for the best Ram or Pen of Ewes in Classes 298-300, the property of an Exhibitor residing in Denbighshire or Flintshire.

⁴ £15 towards these Prizes were given by Breeders of Black-faced Mountain Sheep

Award of Live Stock Prizes at Liverpool, 1910. xv

[Unless otherwise stated, each prize animal named below was bred by exhibitor.]

Class 302. - *Black-faced Mountain Shearling Rams*

[7 entries, none absent.]

- 2382 I. (£10).—JOHN ROBSON, Newton, Bellingham
 2383 II. (£5). JOHN ROBSON, JUN., Lynegar, Watten, Cattham, bred by John Robson
 Newton Bellingham
 2384 III. (£3). OCTAVIUS MONKHOUSE, Cowshill, Wearhead, for Pride o' Weardale,
 bred by M. G. Hamilton, Woolford, Cobbinshaw
 2385 R. N. & H. C. OCTAVIUS MONKHOUSE, for Lingwopper.

Class 303. - *Black-faced Mountain Shearling Ewes* [11 entries, none absent.]

- 2386 I. (£10), & 2391 II. (£5).—JOHN ROBSON, Newton, Bellingham
 2382 III. (£3). JOHN ROBSON, JUN., Lynegar, Watten, Cattham, for ewe, bred by
 John Robson, Newton Bellingham
 2388 R. N. & H. C. OCTAVIUS MONKHOUSE, Cowshill, Wearhead, for Weardale Gem.

PIGS.

Large White Breed.

Class 304. - *Large White Boars, farrowed in 1906, 1907, or 1908.*

[13 entries, 1 absent.]

- 2401 I. (£10 & R. N. for Champion.) W. R. MEASURES, Tallington, Stamford, for
 Tallington Topsman 12817, born July 4, 1908, s. Ruddington Right Stamp 8717, d.
 Peterboro' Pride 14118 by Peterboro' Kitchen 7859.
 2400 II. (£5). R. MILLINGTON KNOWLES, Colston Bassett Hall, Bingham, for Little
 John 11785, born Sept. 13, 1907, bred by the Earl of Ellesmere, Worsley Hall,
 Manchester; s. Samson of Worsley 10065, d. Worsley Princess 26th 17644 by
 Roger 7303
 2404 III. (£3). JOHN & ROBERT PURVIS, The Rookery, Wyboston, St Neots, for
 Right Stamp of Peterboro' 10069, born Jan 20, 1906, bred by W. R. Measures,
 Tallington, Stamford, s. Ruddington Right Stamp, 8717, d. Peterboro' Carnation
 18014 by Shitterton Turk 7037
 2398 R. N. & H. C. THE EARL OF ELLESMERE, for Worsley Samson 18th.

Class 305. - *Large White Boars, farrowed in 1909.*¹

[6 entries, none absent.]

- 2409 I. (£10).—SIR GILBERT GREENALL, BT., Walton Hall, Warrington, for Walton King
 16th 12863, born Jan 17; s. Walton King 8th 10171, d. Caroline 8rd 18274 by Ruddington
 Chieftain 2nd 1077.
 2418 II. (£5).—W. H. & R. WHEBBY, Bourne, for Right Stamp of Bourne 12175, born
 Jan 1, bred by James Lane, Pede Hall West Pinhoebeck, Lincs; s. Ruddington
 Right Stamp 8717, d. Peterboro' Pride 8rd 14418 by Peterboro' Kitchen 7859
 2411 III. (£3). R. H. W. STEPHENSON, Tue Brook, Liverspool, for Spalding Wonder 12795,
 born Jan 18, bred by Alfred W. White, Hillegom, Spalding; s. Worsley Wonder
 10251, d. Worsley Hawthorn 21st 21842 by Worsley Roger 8837
 2406 R. N. & H. C. THE EARL OF ELLESMERE, for Worsley Turk 6th.

Class 306. - *Large White Boars, farrowed in 1910.* [38 entries, 4 absent.]

- 2419 I. (£10). DANIEL R. DAYBELL, Bottesford, Nottingham, for boar, born Jan 5;
 s. Mollington Jay of Bottesford 10885, d. Bottesford Empress 6th 20496 by Ruddington
 Roger of Bottesford 10883
 2428 II. (£5). THE EARL OF ELLESMERE, Worsley Hall, Manchester, for boar, born
 Jan 2, s. Turk of Worsley, d. Bottesford Empress 8rd 18714 by Borrowfield King-
 leader 26th 6201
 2426 III. (£3). THE EARL OF ELLESMERE, for boar, born Jan. 4; s. Worsley Turk
 4th 1217, d. Miss Russell Walker by Holywell Bourne 9181
 2417 IV. (£2). DANIEL R. DAYBELL, for boar, born Jan 8; s. Mollington Jay of
 Bottesford 10885, d. Bottesford Daisy Bell 14th 22462 by Ruddington Eclipse of
 Bottesford 10881.
 2451 R. N. & H. C. W. H. & R. WHEBBY, Bourne, Lincs

Class 307. - *Large White Breeding Sows, farrowed in 1906, 1907, or 1908.*

[13 entries, 2 absent.]

- 2452 I. (£10, & Champion.) THE EARL OF ELLESMERE, Worsley Hall, Manchester,
 for Bottesford Marchington Queen 18128, born Jan. 9, 1906, farrowed Jan. 9,
 bred by Daniel R. Daybell, Bottesford, Nottingham; s. Bottesford Arthur 8457, d.
 Scarsdale Jewel 4th 14588 by Scarsdale King Edward 7238

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best
 Boar or Sow in Classes 304-306.

* Prizes given by the National Pig Breeders' Association

xcvi *Award of Live Stock Prices at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2463 II. (£5.)—W. H. & M. WHERRY, Bourne, for Bramble Bush 23601, born July 6, 1907, farrowed Jan. 9, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Roger 7303, d. Worsley Hawthorn 7th 14900 by Ruddington Ltd 2nd 5607.
2456A III. (£3.)—W. R. MEASURES, Tallington, Stamford, for Tallington Carnation 21716, born Jan. 15, 1907, farrowed Jan. 1; s. Worsley Monarch 19th 9371, d. Peterboro' Carnation 18014 by Shiterton Turk 7937.

- 2154 R. N. & H. C.—THE EARL OF ELLESMERE, for Worsley Princess 31th.

Class 308.—Large White Sows, farrowed in 1909. [11 entries, none absent.]

- 2465 I. (£10.)—THE EARL OF ELLESMERE, Worsley Hall, Manchester, for Worsley Hawthorn 47th 26834, born Jan. 2; s. Emperor of Worsley 10791, d. Worsley Hawthorn 23rd 21840 by Worsley Roger 8827.

- 2467 II. (£5.)—THE EARL OF ELLESMERE, for Worsley Marchington Queen 2nd 26850, born Jan. 8; s. Worsley Turk 4th 1217, d. Bottesford Marchington Queen 18128 by Bottesford Arthur 8487.

- 2468 III. (£3.)—THE EARL OF ELLESMERE for Worsley Marchington Queen 1st 26819, born Jan. 8; s. Worsley Turk 4th 1217, d. Bottesford Marchington Queen 18128 by Bottesford Arthur 8487.

- 2474 R. N. & H. C.—RICHARD STUART, Brook Vale, Sowerby, Gaitsburg, for Lady Agnes Sowerby.

Class 309.—Three Large White Sows, farrowed in 1910.

[16 entries, none absent.]

- 2480 I. (£10.)—THE EARL OF ELLESMERE, Worsley Hall, Manchester, for sows born Jan. 2; s. Worsley Monarch 25th 11193, d. Worsley Princess 34th 21872 by Barkwith Joe 6896.

- 2482 II. (£5.)—JOHN NEAVEYSON, Eye, Peterboro', for sows, born Jan. 2; s. Hugo 13697, d. Eye Lass 3rd 18844 by Eye Conqueror 6377.

- 2488 III. (£3.)—W. H. & E. WHERRY, Bourne, for sows, born Jan. 1, bred by R. Moyers, Gauntley House, Orrel, near Wigan; s. Sowerby Gladiator, d. Duchess of Sowerby by Sowerby King 4th 11015.

- 2477 R. N. & H. C.—THE EARL OF ELLESMERE.

Middle White Breed.

Class 310.—Middle White Boars, farrowed in 1906, 1907, or 1908.

[5 entries, none absent.]

- 2492 I. (£10, & Champion.)—LEOPOLD C. PAGET, Harwood, Leeds, for Wharfedale Reveller 11329, born Jan. 9, 1907; s. Wharfedale Happy Lad 9467, d. Wharfedale Barnard 17810 by Holywell Sherborne 8173.

- 2494 II. (£5.)—CHARLES SPENCER, Holywell Manor, St. Ives, for Holywell Victor Chief 11283, born Aug. 3, 1906, bred by Sanders Spencer & Son; s. Holywell Rosario 8857 d. Holywell Victoria Countess 13298 by Holywell Count 3239.

- 2491 III. (£3.)—MR GILBERT GREENALL, BT., Walton Hall, Warrington, for Walton Clumber 5th 13107, born Jan. 16, 1908; s. Walton Clumber 4th 9427, d. Walton Rose 6th 22180 by Offley John 7395.

- 2493 R. N. & H. C.—THE EARL OF SEFTON, for Tarbock Clumber.

Class 311.—Middle White Boars, farrowed in 1909.²

[7 entries, 1 absent.]

- 2500 I. (£10, & R. N. for Champion.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for Tarbock Clumber 2nd 13007, born Jan. 6; s. Tarbock Clumber 13101, d. Tarbock Fattie 10th 22078 by Walton Turret 1311 9453.

- 2497 II. (£5.)—MR GILBERT GREENALL, BT., Walton Hall, Warrington, for Walton Clumber 6th 13113, born Jan. 17; s. Walton Clumber 4th 9427, d. Walton Rose 6th 22000 by Walton Dainty 3rd 8201.

- 2495 III. (£3.)—THE DUKE OF ARGYLL, K.T., Ro-nenth Castle, Dumfriesshire, for Wharfedale Jester 14129, born Jan. 30, bred by Leopold C. Paget, Harwood, Leeds; s. Devon Bill 11243, d. Wharfedale Frolic 3rd 24210 by Offley Dandy 9117.

- 2498 R. N. & H. C.—LEOPOLD C. PAGET, Harwood, Leeds, for Wharfedale Flare.

Class 312.—Middle White Boars, farrowed in 1910.

[16 entries, 1 absent.]

- 2511 I. (£10.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for boar, born Jan. 2; s. Tarbock Turret 3rd 13113, d. Rose of Hal-nood 23038 by Offley John 7395.

- 2516 II. (£5.)—JONIAN HENWICK, Dunford Bridge, near Sheffield, for Dunford John 2nd, born Jan. 9; s. Walton John 10th 8898, d. Dunford Rose by Castlecroft Rufus 12045.

- 2508 III. (£3.)—LEOPOLD C. PAGET, Harwood, Leeds, for boar, born Jan. 7; s. Tarbock Turret 3rd 13113, d. Walton Rose 30th 16350 by Walton Dainty 3rd 8201.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 310-314.

² Prizes given by the National Pig Breeders' Association.

Award of Live Stock Prices at Liverpool, 1910. xvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 313.—Middle White Breeding Sows, farrowed in 1906, 1907, or 1908.

[9 entries, 2 absent.]

- 2519 I. (£10.)—SIR GILBERT (HRENALL, BT., Walton Hall, Warrington, for Walton Rose 69th 24194, born Oct. 5, 1907, farrowed Jan. 16; s. Southampton Prince 10317, d. Walton Rose 40th 17780 by Walton Rufus 8215.
- 2523 II. (£5.)—CHARLES SPENCER, Holywell Manor, St. Ives, for Holywell Rosella 1st 24092, born Aug. 6, 1907, farrowed March 31; s. Holywell Rosario 8857, d. Holywell Vicereux 19006 by Holywell Viscount 8179.
- 2532 III. (£3.)—THE EARL OF SEFTON, Croxteth Hall Liverpool, for Rose of Halshead 22038, born March 4, 1907, farrowed Jan. 2, bred by Sir Gilbert Greenall, Bt., Walton Hall, Warrington; s. Offley John 7395, d. Walton Rose 60th 20000 by Walton Dainty 3rd 8201.
- 2531 E. N. & H. C.—HUGH PEACOCK, for Southampton Bluebell.

Class 314.—Middle White Sows, farrowed in 1909. [11 entries, none absent.]

- 2530 I. (£10.)—LEOPOLD C. PAGET, Harwood, Leeds, for Wharfedale Pansy 27200, born Jan. 2; s. Manchester of Holywell 11203, d. Turbock Pattie 21st 22100 by Walton Turret 12th 9453.
- 2532 II. (£5.)—SIR GILBERT GREENALL, BT., Walton Hall, Warrington, for Walton Rose 86th 27182, born Jan. 17; s. Walton Clumber 4th 9427, d. Walton Rose 60th 20000 by Walton Dainty 3rd 8201.
- 2533 III. (£3.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for Tarbock Pattie 34th 27184, born Jan. 8; s. Turbock Clumber 12101, d. Tarbock Pattie 10th 22078 by Walton Turret 12th 9453.

- 2535 E. N. & H. C.—CHARLES SPENCER, for Holywell Nonpareil.

Class 315.—Three Middle White Sows, farrowed in 1910.

[10 entries, 2 absent.]

- 2541 I. (£10.)—LEOPOLD C. PAGET, Harwood, Leeds, for sows, born Jan. 7 and 8; bred by exhibitor and the Earl of Sefton, Croxteth Hall, Liverpool; ss. Turbock Turret 8rd 11815 and Tarbock Clumber 12101, d. Walton Rose 30th 16350 by Walton Dainty 3rd 8201, and Tarbock Pattie 12th 22082 by Walton Turret 12th 9453.
- 2542 II. (£5.)—HUGH PEACOCK, Croxteth Hall, Stamford, for sows, born Jan. 2; s. Clumber, d. Southampton Bluebell by Walton Turret 8th 8231.
- 2538 III. (£3.)—I. R. SEFTON, Hammonds, Checkendon, Reading, for sows, born Jan. 18; ss. Dictator 12051 and Abbot of Colleshill 12015, ds. Pendley (price 24128 by First Choice of Penly 10277 and Hammonds, Pianola 24056 by Holywell Rosario 8857.
- 2543 E. N. & H. C.—THE HON. MRS. PLEYDELL-BOUVERIE, Colleshill House, Highworth, for Colleshill Jewel 15th, 16th and 17th.

Tamworth Breed.

Class 316.—Tamworth Boars, farrowed in 1906, 1907, or 1908.

[6 entries, none absent.]

- 2551 I. (£10.)—W. J. PITT, The Albynes, Bridgnorth, for Astley Abbott 11835, born March 3, 1907; s. Director of Whitacre 10381, d. Albynes 30028 by Whitacre Bounder 7511.
- 2552 II. (£5.)—OSWALD C. H. RILEY, The Brains, Pulver, Ledbury, for Oresus 12137, born April 17, 1908; s. Monmouth 2nd 11421, d. Charlotte 22161 by Charlie 11339.
- 2549 III. (£3.)—CHARLES L. COXON, Elford Lodge, Tamworth, for Bishop of Knowle 11387, born Jan. 12, 1907, bred by Mrs. K. Ibbotson, Gun Hill, Arley; s. Scarlet Gem 9553, d. Gem of Gun Hill 20120 by Whitacre Radium 8987.
- 2550 E. N. & H. C.—ROBERT IBBOTSON, for Knowle Lord Minto.

Class 317.—Tamworth Boars, farrowed in 1909. [7 entries, 1 absent.]

- 2556 I. (£10, & E. N. for Champion.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for Knowle Monarch 13101, born Feb. 4; s. Knowle Lord Cromer 11835, d. Knowle Ruby 22358 by Knowle King David 10405.
- 2554 II. (£5.)—CHARLES L. COXON, Elford Lodge, Tamworth, for Elford Bishop 18175, born Jan. 27; s. Bishop of Knowle 11387, d. Middleton Manfreda 24850 by Middleton Maloppe 9537.
- 2557 III. (£3.)—J. H. RAMSBOTHAM, Valleyfield Farm, Aigburth, Liverpool, for Darfield Nugget, born Oct. 30, bred by C. Howard Taylor, Hampole Priory, near Doncaster; s. Knowle Viceroy 12201, d. Darfield Wallflower 20002 by Whitacre Roumer 8399.
- 2559 E. N. & H. C.—OSWALD C. H. RILEY, for Putley Conqueror.

Class 318.—Tamworth Boars, farrowed in 1910. [17 entries, 2 absent.]

- 2558 I. (£10), & 2565 E. N. & H. C.—ROBERT IBBOTSON, The Hawthorns, Knowle, for boar, born Jan. 4; s. Knowle Baron 12189, d. Springfield 24398 by Knowle Don 10892.

¹ Prizes given by the National Pig Breeders' Association.

* Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 316-320.

xcviii *Award of Live Stock Prices at Liverpool, 1910.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2567 II. (£5.)—ROBERT IBBOTSON, for boar, born Jan. 3; s. Knowle Lord Minto 12191, d. Knowle Hylvi 2nd 24340 by Knowle King Solomon 10407.

2568 III. (£3.) CHARLES L. COXON, Elford Lodge, Tamworth, for Elford Rector, born Jan. 11; s. Bishop of Knowle 11337, d. Lady Ruby by Knowle Mont 11307.

Class 319.—Tamworth Breeding Sows, farrowed in 1906, 1907, or 1908.

[9 entries, none absent.]

2579 I. (£10, & Champion.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for Constance 22166, born Jan. 12, 1907, farrowed Jan. 16, bred by Mrs. E. Ibbotson, Gun Hill, Arley; s. Scarlet Gem 9553, d. Gem of Gun Hill 20120 by Whitacre Radium 8987.

2586 II. (£5.)—SIR PETER C. WALKER, Bt., Osmaston Manor, Derby, for Whitacre Cherry Ripe 23130, born May 22, 1907, farrowed Jan. 5, bred by D. W. Philip, The Redlands, Whitacre; s. Director of Whitacre 10381, d. Whitacre Cherry 12564 by Amington Duke 5753.

2583 III. (£3.)—OSWALD C. H. RILEY, The Braunge, Putley, Ledbury, for Charity 24268, born April 17, 1908, farrowed Jan. 2; s. Monmouth 2nd 11421, d. Charlotte 22161 by Charlie 11339.

2581 R. N. & H. C.—ROBERT IBBOTSON, for Knowle Sylvia 2nd.

Class 320.—Tamworth Sows, farrowed in 1909. [10 entries, 1 absent.]

2588 I. (£10), & 2587 R. N. & H. C.—ROBERT DE HAMER, Middleton Hall, Tamworth, for sow, born Jan. 2; s. Gay Lad of Middleton 12181, d. Middleton Microcoma 24364 by Middleton Majestic 8071.

2596 II. (£5.)—SIR PETER C. WALKER, Bt., Osmaston Manor, Derby, for Osmaston Ivy 27396, born Jan. 13; s. Rufus of Osmaston 11435, d. Ivy of Osmaston 22198 by Director of Whitacre 10381.

2589 III. (£3.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for Knowle Princess Dora 2nd 27336, born Feb. 4; s. Knowle Lord Cromer 11365, d. Knowle Ruby 22258 by Knowle King David 10405.

Class 321.—Three Tamworth Sows, farrowed in 1910. [6 entries, 1 absent.]

2597 I. (£10.)—ROBERT IBBOTSON, The Hawthorns, Knowle, for sows, born Jan. 3 and 4; ss. Knowle Lord Minto 12191 and Knowle Baron 12189, ds. Knowle Sylvia 2nd 24340 by Knowle King Solomon 10407, and Knowle Rosie 22266 by Knowle King David.

2600 II. (£5.)—SIR OSWALD MOSLEY, Bt., Rolleston Hall, Burton-on-Trent, for sows, born Jan. 4; s. Adam, d. Rolleston Sweet Vetch by Sweet William 10511.

2598 III. (£3.)—ROBERT IBBOTSON, for sows, born Jan. 3, 4, and 18; ss. Knowle Lord Minto 12191, and Knowle Baron 12189, ds. Knowle Victoria 24324 by Bishop of Knowle 11337, and Springfield 24398 by Knowle Don and Constance 23166 by Scarlet Gem 9553.

2602 R. N. & H. C.—GEORGE WOODFIELD, 179 Anglesey Road, Burton-on-Trent.

Berkshire Breed.

Class 322.—Berkshire Boars, farrowed in 1906, 1907, or 1908.

[10 entries, 2 absent.]

2610 I. (£10.)—HUGH PEACOCK, Greatford Hall, Stunthorpe, for Polegate Donohue 13135, born Jan. 27, 1907, bred by the Duchess of Devonshire, Compton Place, Eastbourne; s. Harold II. 10288, d. Polegate Dulce 9817, by Cecil Augustus 7750.

2605 II. (£5.)—LORD CALTHORPE, Elvetham Park, Winchfield, for Elvetham Champion 2nd, born May 1, 1908; s. Elvetham Champion 12217, d. Elvetham Duchess 2nd 10421 by Okeford Proctor 9259.

2606 III. (£3.)—L. CURRIE, Minley Manor, Farnborough, for Compton Supreme 13980, born May 20, 1907; bred by R. B. Vincent, Compton Valence, Dorchester; s. High moor Terry 11057, d. Compton Crocus 12371 by Supreme's Boy 9743.

2607 R. N. & H. C.—J. JEFFERSON, Willaston, Nantwich, for Crewe Sensation.

Class 323.—Berkshire Boars, farrowed in 1909. [6 entries, 1 absent.]

2615 I. (£10.)—L. CURRIE, Minley Manor, Farnborough, for Motcombe Monarch 14639, born Jan. 2, bred by N. Benjfield, Motcombe, Shaftesbury; s. Dorset Edward 14007, d. Motcombe Barbary 12308 by Commander-in-Chief 10090.

2613 II. (£5.)—LORD CALTHORPE, Elvetham Park, Winchfield, for Elvetham Bugler, born April 11; s. Enfield Bugler 14073, d. Elvetham Fancy 12248 by Supreme's Boy 9743.

2614 III. (£3.)—GODFREY J. B. CHETWYND, Wyndthorpe, near Doncaster, for Conqueror 14440, born May 15, bred by R. B. Vincent, Compton Valence, Dorchester; s. Stratton King 1st 12496, d. Compton Grand Lady 12987 by Crown Prince 5th 13160.

2618 R. N. & H. C.—RUSSELL SWANWICK, R. A. C. Farm, Cirencester.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 318-320.

² Prizes given by the British Berkshire Society.

Award of Live Stock Prizes at Liverpool, 1910. xcix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 324. — *Berkshire Boars, farrowed in 1910.* [17 entries, 3 absent.]

- 2635 I. (£10.) — SAMUEL SANDAY, Puddington Hall, near Chester, for boar born Feb 2; s. Whitley Duke 2nd 1554, d. Poleput Dorothy 13048 by Harold H 10238.
 2610 II. (£5.) — H. R. BERTON, Hammonds, Cheekendon Reading, for boar born Jan. 2; s. Sir Frank 14651 d. Compton Dewdrop 2nd 13986 by Highmoor Tory 11037.
 2623 III. (£3.) — LORD CATHORPE, Elvetham Park, Winchfield, for boar born Jan. 1; s. Elvetham Topper 18140, d. Compton Brilliant 12360 by Supreme's Boy 9743.
 2630 IV. (£2.) — JULIUS A. FRICKER, Sudden Grange, Wincanton, for boar born Jan 3; s. Fightable F.B. 11246, d. Sudden Belinda 12694 by Hightide F.B. 9373.
 2631 E. N. & H. C. — R. E. HORWOOD, Upper Farm, Drayton Beauchamp, Tring.

Class 325. — *Berkshire Breeding Sows, farrowed in 1906, 1907, or 1908.*

[8 entries, none absent.]

- 2641 I. (£10.) — I. CURRIE, Minley Manor, Farnborough, for Minley Prudence 13806, born May 17, 1908, farrowed Jan. 17; s. Highmoor Viscount 12721, d. Pearl of Minley 13460 by Simpleton 11428.
 2643 II. (£5.) — HUGH PEACOCK, Greatford Hall, Stamford, for Warwick Lady 14020 born March 2, 1908, farrowed Jan. 6, bred by R. B. Vincent, Compton Valence, Dorchester; s. Crown Prince 5th 18160, d. Compton Dark Dury 12270 by Supreme's Boy 9743.
 2640 III. (£3.) — I. CURRIE, for Minley Melody 13905, born May 17, 1908, farrowed Jan. 2; s. Highmoor Viscount 12721, d. Pearl of Minley 13460 by Simpleton 11428.
 2637 E. N. & H. C. — WILFRED BUCKLEY, Moundmere Manor, Banbury, for Danesfield Primrose.

Class 326. — *Berkshire Sows, farrowed in 1909.* [14 entries, 4 absent.]

- 2648 I. (£10. & Champion.) — I. CURRIE, Minley Manor, Farnborough, for Motcombe Kitty 14628 born Jan. 2, bred by N. Benjafield, Motcombe, Shaftesbury; s. Dorset Edward 14007, d. Motcombe Berberry 12808 by Commander-in-Chief 10090.
 2650 II. (£5. & E. N. for Champion.) — HUGH PEACOCK, Greatford Hall, Stamford, for Motcombe Queen, born Jan. 2, bred by N. Benjafield, Shorts Green Farm, Motcombe; s. Dorset Edward 14007, d. Motcombe Berberry 14908 by Commander-in-Chief 10090.
 2651 III. (£3.) — J. JEFFERSON, Willaston, Nantwich, for Crews Ella, born Jan. 15; s. Whittlebury Duke 12640 d. Peel Ella 13787 by Peel Nellie 12140.
 2655 IV. (£2.) — W. V. JUDD, Mastanton, Andover, for Mignnette 2nd 14608, born March 8; s. Minley Lad 14102, d. French Partridge 18194 by Fightable F.B. 11246.
 2645 E. N. & H. C. — WILFRED BUCKLEY, for Danesfield Baid 2nd.

Class 327. — *Three Berkshire Sows, farrowed in 1910.*

[8 entries, none absent.]

- 2661 I. (£10.) — JULIUS A. FRICKER, Sudden Grange, Wincanton, for sows, born Jan. 8; s. Fightable F.B. 11246, d. Sudden Belinda 12694 by Hightide F.B. 9373.
 2663 II. (£5.) — W. V. JUDD, Mastanton, Andover, for sows, born Jan. 22; s. Ob 12857, d. Carol 12306 by His Lordship 9887.
 2662 III. (£3.) — R. E. HORWOOD, Upper Farm, Drayton Beauchamp, Tring, for sows, born Jan. 1; s. Peel John 14388, d. Christabelle's Pride 18573 by Stoke Mastermad.
 2665 E. N. & H. C. — SAMUEL SANDAY, Puddington Hall, near Chester.

Large Black Breed.

Class 328. — *Large Black Boars, farrowed in 1906, 1907, or 1908.*

[6 entries, 1 absent.]

- 2667 I. (£10. & Champion.) — TERRA F. HOOLEY, Papworth Hall, near Cambridge, for Hanley Achilles 1969, born Sept. 10, 1908, bred by H. Sessions, Wootton Manor, Henley-on-Thames; s. Lord Squire 2nd 1369, d. Ifton Darkie 4833 by Lord Roberts 2nd 553.
 2666 II. (£5. & E. N. for Champion.) — KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Saint 2751, born March 1, 1908; s. Sudbourne Prince 2807, d. Sudbourne Sarah A 4696 by Lord Baron 587.
 2671 III. (£3.) — THOMAS WARNE, Trevisquite Manor, St. Mabyn, Cornwall, for Levisathan 2677, born July 1, 1907, bred by S. Adams, Boscha, Helston, Cornwall; s. Boscha Champion 2135, d. Trevisquite Topsy 5764 by Trevisquite Cornish 987.
 2668 E. N. & H. C. — C. F. MARRINER, for Grundisburgh King.

¹ Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 324 to 328.

² Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 326-329.

c Award of Live Stock Prizes at Liverpool, 1910.

[Unless otherwise stated, each prize Animal named below was "bred by exhibitor."]

Class 329.—Large Black Boars, farrowed in 1909.

[10 entries, none absent.]

2673 I. (£10).—F. G. S. CHERITSEW, Oaklands Park, Tolleshunt Knights, Witham, Essex, for Tintree 2nd 2035, born March 6; s. Hasketon Black King 10th, 1937, d. Trevisquite Winner 6728 by Brent Chief 1243.

2676 II. (£5).—TERAH F. HOOLEY, Papworth Hall, near Cambridge, for Drayton Valesman 2973, born Feb. 11; s. Drayton Demon 4th 2353, d. Pride of the Valley 7026 by King of the Valley 1869.

2677 III. (£3).—HENRY J. KINGWELL, Great Aish, South Brent, for Tansor King Tom 2951, born March 2, bred by R. A. Muntz, Tansor, Oundle; s. Tansor Timotheus 2479, d. Goodameavy Lady Godiva 4893 by Trescowe Pride 875.

2672 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Jock.

Class 330.—Large Black Boars, farrowed in 1910. [12 entries, 1 absent.]

2690 I. (£10).—O. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for boar, born Jan. 2; s. Hasketon Bodminson 13th 2149, d. Hasketon Polly Frith 2nd 7872 by Hasketon Black King 4th 1129.

2692 II. (£5).—THOMAS WARNE, Trevisquite Manor, St. Mabyn, for boar, born Jan. 4; s. Trekeiland Masterpiece 2207, d. Trevisquite Content 1th 6934 by Trevisquite Confidence 1203.

2689 III. (£3).—HENRY J. KINGWELL, Great Aish, South Brent, for boar, born Jan. 3 s. Brent Oakenclough 2961, d. Brent Souvenir 8190 by Whalesborough Chief 717.

2683 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk.

Class 331.—Large Black Breeding Sows, farrowed in 1906, 1907, or 1908.

[10 entries, 1 absent.]

2703 I. (£10, & Champion).—JOHN WARNE, Treveglor, St. Mabyn, for Treveglor Lass 4th 7726, born Jan. 15, 1908, farrowed Jan. 12; s. Treveglor Pride 2321, d. Treveglor Lass 2nd 6220 by Trevisquite Confidence 1203.

2700 II. (£5, & R. N. for Champion).—O. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for Hasketon Long Lady 3rd 7270, born Jan. 7, 1907, farrowed Jan. 24; s. Lux Rex 1180, d. Long Lady 1806 by Launceston Duke 395.

2699 III. (£3).—HENRY J. KINGWELL, Great Aish, South Brent, for Brent Dame 1st 5838, born Jan. 26, 1906, farrowed March 18; s. Trescowe Pride 875, d. Cornwood Lass 11th 3710 by Cornwood Marquis 633.

2697 R. N. & H. C.—TERAH F. HOOLEY, for Fulwood Princess 2nd.

Class 332.—Large Black Sows, farrowed in 1909. [10 entries, none absent.]

2705 I. (£10).—TERAH F. HOOLEY, Papworth Hall, near Cambridge, for Drayton Monitress 1st 4474, born Feb. 5; s. Drayton Demon 4th 2353, d. Drayton Diadem 7th 7696 by Henley Achilles 1980.

2709 II. (£5).—O. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for Hasketon Long Bess 15th 8640, born Jan. 30; s. Hasketon Black King 4th 1129, d. Hasketon Long Bess 3rd 4154 by Black King 545.

2704 III. (£3).—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Salvata 8670, born Jan. 7; s. Nigger 2597, d. Sudbourne Salad 7318 by Sudbourne Surprise 17-3.

2708 R. N. & H. C.—O. F. MARRINER, for Hasketon Long Bess 18th.

Class 333.—Three Large Black Sows, farrowed in 1910.

[9 entries, none absent.]

2714 I. (£10).—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for sows, born Jan. 3 and 4; s. Nigger 2597 and Sudbourne Saint 2751, d. Sudbourne Salad 7318 by Sudbourne Surprise 1723, d. Sudbourne Jolly 8023 by Sudbourne Masterpiece 2303.

2716 II. (£5).—TERAH F. HOOLEY, Papworth Hall, near Cambridge, for sows, born Jan. 1; s. Drayton Demon 4th 2353, d. Drayton Danny 11th 7690 by Henley Achilles.

2718 III. (£3).—O. F. MARRINER, Thorpe Hall, Hasketon, Woodbridge, for sows, born Jan. 2; s. Hasketon Bodminson 13th 2149, d. Hasketon Polly Frith 2nd 7872 by Hasketon Black King 4th 1129.

2715 R. N. & H. C.—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham.

Lincolnshire Curly-coated Breed.

Class 334.—Lincolnshire Curly-coated Boars, farrowed in 1906, 1907, or 1908.

[4 entries.]

2733 I. (£10, & Champion).—HENRY CAUDWELL, Old Leake, Boston, for Holbeach King 771, born in Jan., 1906, bred by R. E. Caudwell, Holbeach Marsh, Lincs.; s. Marsh Dun-by 309, d. Marsh Curly 536 by Marsh Midville 207.

¹ Prizes given by the Large Black Pig Society.

² Silver Challenge Cup, value Twenty Guinea, given by the Large Black Pig Society for the best Sow in Classes 331 and 332.

³ Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 334-336.

Award of Live Stock Prizes at Liverpool, 1910. oi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2726 II. (£5.) - EDMUND ROYDS, M.P., Holycross, Caythorpe, Grantham, for Caythorpe Samson 679, born Jan. 28, 1908, bred by J. H. Smith, Firby, Spilsby; s. Havenhouse Top Score 485, d. Firby Amazon 288 by Steeping Knight 287.

2724 III. (£3.) - GEORGE FRER, Toilethorpe House, Deeping St. Nicholas, Spalding, for Carrington Grange Cedric 787, born Feb. 25, 1908, bred by T. Ward & Son, Carrington Grange, Boston; s. Lendenhall Baldwin 497, d. Lendenhall Ann 616 by Lendenhall Toby 193.

2725 R. N. & H. O. - THE MARL OF LONDESBOROUGH, Blankney Hall, Lincoln, for Londesborough Emperor.

Class 335.—*Lincolnshire Curly-coated Boars, farrowed in 1909.*¹

[6 entries, 1 absent.]

2727 I. (£10.) - ALFRED B. BASS, Beech House, Holbeach Marsh, for Holbeach Hero 1101, born April 8; s. Carrington Grange Cedric 787, d. Holbeach Curly 2nd 2504 by Holbeach King 771.

2728 II. (£5.) - FRED CASSWELL, JUN., Manor House, Graby, Folkingham, for Graby Top Card 1073, born in March, bred by H. S. Scorer, Orton Longueville, Peterborough; s. Cloudy Expectation 307, d. East Kirkby Alexandra 236 by Stickney Alice 291.

2730 III. (£3.) - HENRY CAUDWELL, Old Leake, Boston, for Midville Prince 2nd 1147 born Jan. 28; s. Midville Royal 829, d. Midville Queen 2792 by Midville Keal 533.

2729 R. N. & H. O. - WILLIAM BRAY, East Keal, Spilsby, for Keal King.

Class 336.—*Lincolnshire Curly-coated Boars, farrowed in 1910.*

[10 entries, 2 absent.]

2737 I. (£10. & R. N. for Champion.*) - EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for boar, born Jan. 4; s. Caythorpe Samson 679, d. Dowsby Ashby 34 by Dowsby Quadrant Oak 721.

2733 II. (£5.) - WILLIAM ABBOTT, Swaton, near Folkingham, for Bold Captain, born Jan. 1; s. Swaton Captain 877, d. Bold Agnes by Swaton Chief 299.

2734 III. (£3.) - HENRY CAUDWELL, Old Leake, Boston, for Midville Tariff Reform 2nd, born Jan. 17; s. Firby Chevalier 738, d. Midville Queen 5th by Midville Thornton 825.

2741 R. N. & H. O. - C. W. TINDALL, Wainfleet.

Class 337.—*Lincolnshire Curly-coated Breeding Sows, farrowed in 1906, 1907, or 1908.* [2 entries.]

2743 I. (£10. & Champion.*) - HENRY CAUDWELL, Old Leake, Boston, for Midville Queen 1st 2792, born Jan. 9, 1907, farrowed March 5; s. Midville Bob 228, d. Midville Beauty 3rd 598 by Midville Casswell 221.

2744 II. (£5.) - GEORGE FRER, Toilethorpe House, Deeping St. Nicholas, Spalding, for Deeping Pride 5th 2334, born Sept. 20, 1907, farrowed Feb. 5; s. Crowland Chief 899, d. Deeping Pride 2nd 158 by Crowland Tom 39.

Class 338.—*Lincolnshire Curly-coated Sows, farrowed in 1909.*

[4 entries.]

2746 I. (£10. & R. N. for Champion.*) - HENRY CAUDWELL, Old Leake, Boston, for Midville Abbotsess, born March 8, bred by William Abbott, Swaton, Folkingham; s. Swaton Captain 877, d. Bold Molly 2210 by Swaton Crowland 597.

2747 II. (£5.) - GEORGE FRER, Toilethorpe House, Deeping St. Nicholas, Spalding, for Deeping Pride 25th, born March 1; s. Carrington Grange Cedric 787, d. Deeping Pride 5th 2334 by Crowland Chief 899.

2745 III. (£3.) - WILLIAM BRAY, East Keal, Spilsby, for Midville Suspense 5th, born April 16; s. Firby Chevalier 738, d. Keal Suspense 3rd 2654 by Midville Thornton 825.

2748 R. N. & H. O. - GEORGE FRER, for Deeping Pride 26th.

Class 339.—*Three Lincolnshire Curly-coated Sows, farrowed in 1910.*

[7 entries, none absent.]

2749 I. (£10.) - WILLIAM ABBOTT, Swaton, near Folkingham, for Bold Ada, Bold Alice, and Bold Amy, born Jan. 1; s. Swaton Captain 877, d. Bold Agnes by Swaton Chief 299.

2756 II. (£5.) - C. W. TINDALL, Wainfleet, for sows, born Jan. 21, bred by J. P. L. Hodson, Marsh Farm, Wainfleet; s. Firby Commodore 739, d. Gibraltar Belle 4th 3488 by Havenhouse Top Score 486.

2751 III. (£3.) - GEORGE GODSON, Asgarby, Heckington, for sows, born Jan. 17; s. Heckington Welsher 787, d. Heckington Clara 2574 by Heckington Great Gun 471.

2750 R. N. & H. O. - HENRY CAUDWELL, Old Leake, Boston.

¹ Prizes given by the Lincolnshire Curly-coated Pig Breeders' Association.

* Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 334-336.

* Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 337 and 338.

POULTRY.

By "Cock," "Hen," "Drake," "Duck," "Gander," and "Goose" are meant birds hatched previous to January 1, 1910, and by "Cockerel," "Pullet," "Young Drake," and "Duckling," are meant birds hatched in 1910, previous to June 1.

Class 340.—Old English Game Spangled Cocks. [6 entries, none absent.]

- 1 I. (30s.) MISS R. B. BABCOCK, Rimington, Clitheroe
- 2 II. (20s.)—ROBERT BELL, Warwick Bridge, Carlisle.
- 3 III. (10s.) W. & J. H. HEYS, West Villa, Facit, Rochdale.
- 4 R. N. & H. C.—J. J. REED, Silby Wrea Farm, Langley-on-Tyne.

Class 341.—Old English Game Spangled Hens. [8 entries, none absent.]

- 7 I. (30s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
- 11 II. (20s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale
- 8 III. (10s.)—LEES BROADBENT, Appleton House, Denton, Lancs.
- 10 R. N. & H. C.—GEORGE E. DODD, Lilac Cottage, Bickerton, Malpas.

Class 342.—Old English Game Black-Red Cocks [18 entries, none absent]

- 21 I. (30s.)—T. O. HEATH, Keele, Newcastle, Staffs
- 22 II. (20s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
- 15 III. (10s.)—ARMSTRONG & CROZIER, Holly Square, Cockermouth
- 28 R. N. & H. C.—JOHN OLIVER, Threepwood Farm, Haydon Bridge.

Class 343.—Old English Game Clay or Wheaten Hens.

[10 entries, none absent.]

- 33 I. (30s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
- 37 II. (20s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
- 36 III. (10s.)—T. O. HEATH, Keele, Newcastle, Staffs.
- 34 R. N. & H. C.—S. R. COMPTON, Thornliebank, Whirley Road, Macclesfield.

Class 344.—Old English Game Cocks, any other colour. [16 entries, 1 absent.]

- 52 I. (30s.)—MISS BURGLAIN LOFT, Castellonai, Carnarvon.
- 45 II. (20s.)—S. R. COMPTON, Thornliebank, Whirley Road, Macclesfield.
- 48 III. (10s.)—DR. F. L. ARMSTRONG, Harford Hill, Northwich.
- 57 R. N. & H. C.—FALKNER NICHOLSON, Highfield Hall, Leek.

Class 345.—Old English Game Hens, any other colour.

[10 entries, none absent.]

- 60 I. (30s.) MISS R. B. BABCOCK, Rimington, Clitheroe
- 61 II. (20s.) S. R. COMPTON, Thornliebank, Whirley Road, Macclesfield.
- 67 III. (10s.)—ERNEST WARD, Tibshelf, Alfreton.
- 62 R. N. & H. C.—JOHN F. DODD, Bickerton, Newcastleton

Class 346.—Old English Game Cockerels, any colour

[13 entries, 1 absent]

- 75 I. (30s.), & 70 II. (20s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
- 12 III. (10s.) W. & A. DOWNON, Newlands, Frosterley, Durham
- 78 R. N. & H. C.—J. E. D. MOYNEY, Venton, Totnes.

Class 347.—Old English Game Pullets, any colour. [10 entries, 2 absent.]

- 89 I. (30s.), & 91 II. (20s.) LAMBERT BROTHERS, East View, Silsden.
- 83 III. (10s.) MISS R. B. BABCOCK, Rimington, Clitheroe
- 84 R. N. & H. C.—ROBERT BELL, Warwick Bridge, Carlisle.

Class 348.—Indian Game Cocks or Cockerels. [8 entries, 2 absent.]

- 95 I. (30s.), & 98 R. N. & H. C. W. & J. H. HEYS, West Villa, Facit, Rochdale.
- 93 II. (20s.)—WILLIAM BRENT, Clampit, Callington, Cornwall.
- 94 III. (10s.)—FRANK CLIFFTON, Oakfield, Cheddle Hulme, Cheshire.

Class 349.—Indian Game Hens or Pulls. [9 entries, 2 absent.]

- 105 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
- 101 II. (20s.)—GEORGE BETTS, Gooastre, Cheshire.
- 100 III. (10s.)—H. ANNINGSOON, Manor House, Humberstone, Grimsby.
- 102 R. N. & H. C.—WILLIAM BRENT, Clampit, Callington, Cornwall.

Class 350.—Modern Game Cocks or Cockerels, any colour.

[6 entries, none absent.]

- 109 I. (30s.), & 113 III. (10s.)—JOHN BRENNAND, Baldersby Park, Thirsk.
- 112 II. (20s.)—J. LEWIS, Cote Brook, Tarporeley.
- 110 R. N. & H. C.—ROBERT H. CLEWES, Royhill, Breaston, Derby.

Award of Poultry Prizes at Liverpool, 1910. ciii

Class 351. *Modern Game Hens or Pullets, any colour* [5 entries, none absent]

- 117 I. (30s.) J. LEWIS, Cote Brook, Tarpoley.
118 II. (20s.) MAJOR G. T. WILLIAMS Manor House, Burton Joyce, Nottingham
119 III. (10s.) & 115 R. N. & H. C. JOHN BRENNAND, Baldersby Park, Thirsk

Class 352. *Game Cocks or Cockerels* [3 entries]

- 120 I. (30s.) THOMAS MASON, Ribblesdale, Ingleton Kirkby Lonsdale
121 II. (20s.) F. R. STEPHENS 11 West Park Terrace, Crown Hill, Devon
122 III. (10s.)—AUBREY F. WOOLFEN, Croft House, Exsom

Class 353. *Game Hens or Pullets* [1 entry]

- 123 I. (30s.)—AUBREY F. WOOLFEN Croft House, Exsom

Class 354. *-Langshan Cocks or Cockerels.* [9 entries, 1 absent]

- 124 I. (30s.)—R. ANTHONY, Home Farm, Huxton, Chorley
125 II. (20s.)—A. SIMPSON Burnley Road, Padiham, Lancs.
126 III. (10s.)—HARRY WALLIS Northend, Witley, Brentwood
127 R. N. & H. C.—C. CHAPMAN, Pengwern, Wlverston

Class 355. *-Langshan Hens or Pullets.* [12 entries, 1 absent]

- 128 I. (30s.)—H. ALTY, Vine Cottage, Pilling, Garstang.
129 II. (20s.) R. CLARKE Eaton, Tarpoley
130 III. (10s.) R. ANTHONY, Home Farm, Huxton, Chorley.
140 R. N. & H. C.—JOSEPH PICKERILL, Sound Councel School, Nantwich.

Class 356. *-Plymouth Rock Barred Cocks.* [11 entries, 1 absent.]

- 150 I. (30s.)—LORD IMITH OF FYVIE, Fyvie Castle, Aberdeenshire.
146 II. (20s.) JAS. BAFEMAN Milnthorpe
148 III. (10s.) GEORGE E. GUSE, Thackham, Winchfield.
149 R. N. & H. C.—G. & M. ATHERTON, Rose Hill, Aughton, Ormskirk.

Class 357. *-Plymouth Rock Barred Hens.* [11 entries, 4 absent]

- 161 I. (30s.) EDWARD S. JACKSON, M.D., Carnforth.
162 II. (20s.)—F. MARSHALL Lenton, Nottingham.
163 III. (10s.)—L. H. & J. NUTTER, Burton, Carnforth
178 R. N. & H. C.—W. H. WHINNERAH, Craigholme, Warton, Carnforth.

Class 358. *-Plymouth Rock Barred Cockerels.* [16 entries, 2 absent.]

- 175 I. (30s.)—MISS BURROW, Burckstone House, Carnforth.
184 II. (20s.)—WILLIAM SLATER, Highfield, Lancaster.
178 III. (10s.)—J. W. AIREY 5 Dalton Square, Lancaster
179 R. N. & H. C.—W. H. HARDACRE, Rose Cottage, Poulton-le-Fylde.

Class 359. *-Plymouth Rock Barred Pullets.* [19 entries, 2 absent.]

- 198 I. (30s.)—GARDNER BROTHERS, Pilling, Garstang
199 II. (20s.)—JAMES ISLES, Leyland Hall, Midlar, Kirkham
200 III. (10s.)—L. H. & J. NUTTER, Burton, Carnforth.
199 R. N. & H. C.—W. H. HARDACRE, Rose Cottage, Poulton-le-Fylde.

Class 360. *-Plymouth Rock Cocks, any other colour.* [13 entries, none absent.]

- 214 I. (30s.)—G. & M. ATHERTON, Rose Hill, Aughton, Ormskirk.
220 II. (20s.)—CHARLES THRELUSSON, Brodsworth Poultry Farm, Doncaster.
219 III. (10s.)—P. B. GOVERT, Tidford, St. Germans
211 R. N. & H. C.—MISS FLETCHER, Frost Hill, Yatton, Bristol.

Class 361. *Plymouth Rock Hens, any other colour.* [10 entries, 1 absent.]

- 220 I. (30s.) & 220 II. (20s.) & 210 R. N. & H. C.—CHARLES THRELUSSON, Brodsworth Poultry Farm, Doncaster
221 III. (10s.)—R. ANTHONY, Home Farm, Huxton, Chorley.

Class 362. *Plymouth Rock Cockerels, any other colour* [19 entries, 2 absent]

- 244 I. (30s.)—L. H. & J. NUTTER, Burton, Carnforth.
252 II. (20s.)—JAMES BAFEMAN, Milnthorpe.
219 III. (10s.) CHARLES THRELUSSON, Brodsworth Poultry Farm, Doncaster.
231 R. N. & H. C. (G. & M. ATHERTON, Rose Hill, Aughton, Ormskirk

Class 363. *-Plymouth Rock Pullets, any other colour.* [25 entries, 3 absent.]

- 257 I. (30s.)—C. N. GOODE, Peckfield Lodge, South Milford.
261 II. (20s.)—EDWARD S. JACKSON, M.D., Carnforth.
271 III. (10s.)—DR. A. BARRY SYER, The Manor House, Formby.
272 R. N. & H. C.—CHARLES THRELUSSON, Brodsworth Poultry Farm, Doncaster.

civ *Award of Poultry Prizes at Liverpool, 1910.*

Class 364.—Gold or Silver Laced Wyandotte Cocks. [7 entries, none absent.]

- 276 I. (20s.)—TOM H. FURNES, Carlton House, Chesterfield
280 II. (20s.)—W. H. SMITH, Peets Lane, Southport.
277 III. (10s.)—ART. C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington, Kent.
278 R. N. & H. C. W. L. HORBURY, Bromborough, Cheshire.

Class 365.—Gold or Silver Laced Wyandotte Hens. [12 entries, none absent.]

- 282 I. (30s.)—DR. A. BARRY SYKES, The Manor House, Formby.
284 II. (20s.)—TOM H. FURNES, Carlton House, Chesterfield.
281 III. (10s.)—W. H. SMITH, Peets Lane, Southport
293 R. N. & H. C.—WALTER YOXALL, Oaken, Codrall, Wolverhampton.

Class 366.—Gold or Silver Laced Wyandotte Cockerels.

[11 entries, none absent.]

- 297 I. (30s.)—T. C. HEATH, Keele, Newcastle, Staffs.
296 II. (20s.)—TOM H. FURNES, Carlton House, Chesterfield.
302 III. (10s.)—W. L. HORBURY, Bromborough, Cheshire.
304 R. N. & H. C.—W. A. & R. F. SPENCER, Chelmescote, Baulke, Banbury.

Class 367.—Gold or Silver Laced Wyandotte Pullets. [17 entries, 2 absent.]

- 315 I. (30s.)—W. L. HORBURY, Bromborough, Cheshire.
320 II. (20s.)—W. H. SMITH, Peets Lane, Southport
309 III. (10s.)—JOHN DOBSON, 29 Church Street, Kirkham.
306 R. N. & H. C. R. BARNES, Richmond Road, Barnoldswick, Colne.

Class 368.—White Wyandotte Cocks. [12 entries, none absent.]

- 327 I. (30s.) & 331 II. (20s.) R. ANTHONY, Home Farm, Ruxton, Chorley.
325 III. (10s.)—THE COUNTS OF DERBY, Coworth Park, Sunningdale, Ascot.
326 R. N. & H. C.—GEORGE DUCKWORTH, The Manor, Poulton-le-Fylde.

Class 369.—White Wyandotte Hens. [16 entries, 1 absent.]

- 334 I. (30s.)—R. ANTHONY, Home Farm, Ruxton, Chorley.
342 II. (20s.)—GEORGE DUCKWORTH, The Manor, Poulton-le-Fylde.
337 III. (10s.)—THE COUNTS OF DERBY, Coworth Park, Sunningdale, Ascot.
340 R. N. & H. C.—TOM H. FURNES, Carlton House, Chesterfield.

Class 37.—White Wyandotte Cockerels. [25 entries, 3 absent.]

- 351 I. (30s.)—R. ANTHONY, Home Farm, Ruxton, Chorley.
365 II. (20s.)—W. F. H. HANCOCK, Sidney Villa, Churchill, Somerset
371 III. (10s.)—JOHN SMITH, Birles Cottages, Ashton-on-Ibbble, Preston.
368 R. N. & H. C.—WILLIAM CLAYTON, The Laurels, Seesay, Thirsk.

Class 371.—White Wyandotte Pullets. [27 entries, 3 absent.]

- 381 I. (30s.)—THE COUNTS OF DERBY, Coworth Park, Sunningdale, Ascot.
390 II. (20s.)—THOMAS HENSHILLWOOD, Cave Road, Colntraine, Kyles of Bute.
382 III. (10s.)—G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lomock, Lancs.
376 R. N. & H. C. R. ANTHONY, Home Farm, Ruxton, Chorley.

Class 372.—Black Wyandotte Cocks. [17 entries, 1 absent.]

- 409 I. (30s.)—T. C. HEATH, Keele, Newcastle, Staffs.
403 II. (20s.)—BENTLEY BERTHAM, Whitwick Poultry Farm, Leicester.
405 III. (10s.)—TOM H. FURNES, Carlton House, Chesterfield.
410 R. N. & H. C. BERT KIRKMAN, Broughton, Preston.

Class 373.—Black Wyandotte Hens. [22 entries, 1 absent.]

- 410 I. (30s.)—R. ANTHONY, Home Farm, Ruxton, Chorley.
427 II. (20s.)—TOM H. FURNES, Carlton House, Chesterfield.
425 III. (10s.)—G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lomock, Lancs.
430A R. N. & H. C. BERT KIRKMAN, Broughton, Preston.

Class 374.—Black Wyandotte Cockerels. [13 entries, 3 absent.]

- 446 I. (30s.)—TOM H. FURNES, Carlton House, Chesterfield.
444 II. (20s.)—G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lomock, Lancs.
440 III. (10s.)—H. ALTY, Vine Cottage, Pilling, Garstang.
452 R. N. & H. C. JAMES A. GLOVER, Prospect House, Pirbright Lane, Upholland, Wigan.

Class 375.—Black Wyandotte Pullets. [12 entries, none absent.]

- 453 I. (30s.)—JACK BUTTERFIELD, Ferndene, Benthams, Lancaster.
461 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
453 III. (10s.)—MILLION-BE POULTRY FARM, Broom, Eye, Suffolk.
455 R. N. & H. C.—GEORGE F. CRAGG, Rocklands, Rhoos, Colwyn Bay.

Class 376. Partridge Wyandotte Cocks. [10 entries, none absent.]

- 406 I. (30s.) G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lostock, Lancs.
 409 II. (20s.) & 472 III. (10s.) T. MITCHELL, 7 Tynce St., Parkwood Bottom, Keighley.
 470 R. N. & H. C. JAMES BRIDGES, New Farm, Glazebrook, Manchester.

Class 377. Partridge Wyandotte Hens. [7 entries, none absent.]

- 479 I. (30s.) W. JENKINS, Lynchfield, Bishop's Lydeard.
 480 II. (20s.) HUBERT WRIGHT, Mayfield, Keighley.
 477 III. (10s.) GEORGE DUCKWORTH, The Manor, Poulton-le-Fylde.
 475 R. N. & H. C. J. A. BOARDLEY, Slyne Road, Lancaster.

Class 378. --Partridge Wyandotte Cockerels. [2 entries.]

- 483 I. (30s.) HUBERT WRIGHT, Mayfield, Keighley.
 482 II. (20s.) --R. DICKINSON, 9 Sandy Lane, Royton, Oldham.

Class 379. --Partridge Wyandotte Pullets. [3 entries.]

- 486 I. (30s.) -- HUBERT WRIGHT, Mayfield, Keighley.
 485 II. (20s.) GEORGE DUCKWORTH, The Manor, Poulton-le-Fylde
 484 III. (10s.) --J. A. BOARDLEY, Slyne Road, Lancaster.

Class 380. Columbian Wyandotte Cocks or Cockerels. [7 entries, 1 absent.]

- 480 I. (30s.) & 493 III. (10s.) --MILNE & HENON, Woodside Cottage, Whaley Bridge.
 487 II. (20s.) --HARRY C. ARDRON, The Fosse, Syston, Leicester.
 488 R. N. & H. C. H. W. BUCKLAND, Lower Wick, Worcester.

Class 381. --Columbian Wyandotte Hens or Pullets. [10 entries, 3 absent.]

- 495 I. (30s.) -- H. W. BUCKLAND, Lower Wick, Worcester.
 490 II. (20s.) HENRY FIELDS, Hill House, Moberley, Cheshire.
 484 III. (10s.) --HARRY C. ARDRON, The Fosse, Syston, Leicester.
 503 R. N. & H. C. --L. H. WADE, Kingwood Lodge, Beaminster.

Class 382. --Blue Wyandotte Cocks or Cockerels. [8 entries, none absent.]

- 504 I. (30s.) & 508 III. (10s.) G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lostock, Lancs.
 506 II. (20s.) JAMES HOLMES, Leck, Kirkby Lonsdale.
 511 R. N. & H. C. JAMES TURNER, Poultry Yards, Benthams, Yorks.

Class 383. Blue Wyandotte Hens or Pullets. [9 entries, none absent.]

- 512 I. (30s.) --JAMES BATEMAN, Milnthorpe.
 513 II. (20s.) G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lostock, Lancs.
 518 III. (10s.) --WILLIAM SLATER, Highfield, Lancaster.
 519 R. N. & H. C. --JAMES TURNER, Poultry Yards, Benthams, Yorks.

Class 384. Wyandotte Cocks, any other variety. [8 entries, 1 absent.]

- 521 I. (30s.) --R. ANTHONY, Home Farm, Fuxton, Chorley.
 524 II. (20s.) --TOM H. FURNESS, Carlton House, Chesterfield.
 527 III. (10s.) SAM WILLIAMS, 30 Leamington Terrace, Ilkley.
 526 R. N. & H. C. --HARRY WILKMAN, Church Street, Swadlincote.

Class 385. --Wyandotte Hens, any other variety. [6 entries, none absent.]

- 523 I. (30s.) & 529 R. N. & H. C. R. ANTHONY, Home Farm, Fuxton, Chorley.
 531 II. (20s.) --THOMAS CHARLTON, Thornes Cottage, Woodside, Ryton-on-Tyne.
 532 III. (10s.) --M. W. DAVIES, Cowbridge.

Class 386. Wyandotte Cockerels, any other variety. [No entry.]

Class 387. --Wyandotte Pullets, any other variety. [1 entry.]

- 535 I. (30s.) --WALTER BUXTON, Trinity Poultry Farm, Bentworth, Alton.

*** Class 388. --Buff Orpington Cocks.** [23 entries, 2 absent.]

- 540 I. (30s.) --P. B. GOVETT, Tidesford, St. Germans.
 538 II. (20s.) --FRANK BLOOMER, Foxcote, Sloughbridge.
 541 III. (10s.) --WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
 550 R. N. & H. C. --MRS. POWELL, Orpington Poultry Farm, Orpington.

Class 389. --Buff Orpington Hens. [9 entries, none absent.]

- 547 I. (30s.) --THOMAS WHITTAKER, The Leund, Accrington.
 546 II. (20s.) --THOMAS BROTHERS, Emlyn Poultry Yards, Resolvere, Neath.
 544 III. (10s.) --F. SHORTER, 54 Taunton Road, Lee.
 553 R. N. & H. C. --GEORGE E. PROCTOR, Flass House, Durham.

cvi *Award of Poultry Prizes at Liverpool, 1910.*

Class 390.—Buff Orpington Cockerels. [26 entries, 2 absent.]

- 577 I. (30s.)—G. M. & W. W. DODSON, Bolton Model Poultry Farm, Lostock, Lancs.
 585 II. (20s.)—W. H. LAWRENCE, Chobham Poultry Farm, Woking.
 575 III. (10s.)—ENTWISLE BROTHERS, The Firs, Calder Grove, Wakefield.
 579 R. N. & H. C.—ART C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington.

Class 391.—Buff Orpington Pullets. [29 entries, 3 absent.]

- 611 I. (30s.), 616 II. (20s.), & 607 III. (10s.)—ENTWISLE BROTHERS, The Firs, Calder Grove, Wakefield.
 619 R. N. & H. C.—WILLIAM M. YETTS, The Wood, Maybury, Woking

Class 392.—White Orpington Cocks. [11 entries, 2 absent.]

- 627 I. (30s.), & R. N. for Ring.¹—W. L. HORBURY, Bromborough, Cheshire.
 624 II. (20s.)—W. M. BELL, St Leonard's Poultry Farm, Ringwood.
 638 III. (10s.)—WHITAKER & TOOTILL, Quarry Farm, Pool, Leeds.
 636 R. N. & H. C.—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot

Class 393.—White Orpington Hens. [11 entries, 1 absent.]

- 643 I. (30s.), & Ring.¹—W. L. HORBURY, Bromborough, Cheshire.
 644 II. (20s.)—WHITAKER & TOOTILL, Quarry Farm, Pool, Leeds.
 637 III. (10s.)—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 641 R. N. & H. C.—GEORGE H. PROCTER, Flass House, Durham.

Class 394.—White Orpington Cockerels. [15 entries, 1 absent.]

- 648 I. (30s.)—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 652 II. (20s.)—HAYWARD CARPENTER, Pitmore Poultry Farm, Worplesdon, Guildford.
 658 III. (10s.)—T. J. STABLES, Burton, Westmorland.
 645 R. N. & H. C.—R. ANTHONY, Home Farm, Ruxton, Chorley.

Class 395.—White Orpington Pullets. [16 entries, 2 absent.]

- 663 I. (30s.)—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 674 II. (20s.)—T. J. STABLES, Burton, Westmorland.
 668 III. (10s.)—HAYWARD CARPENTER, Pitmore Poultry Farm, Worplesdon, Guildford.
 664 R. N. & H. C.—G. M. & W. W. DODSON, Bolton Model Poultry Farm, Lostock, Lancs.

Class 396.—Black Orpington Cocks. [12 entries, 1 absent.]

- 678 I. (30s.)—W. M. BELL, St Leonard's Poultry Farm, Ringwood.
 680 II. (20s.)—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Gray.
 683 III. (10s.)—J. LEWIS, Cote Brook, Tarporley.
 687 R. N. & H. C.—G. F. SYKES, Colley Gate, Cradley Heath.

Class 397.—Black Orpington Hens. [13 entries, none absent.]

- 692 I. (30s.)—CLARK BROTHERS, New Close Farm, Sladen.
 689 II. (20s.)—J. BAILY & SON, Heathfield Poultry Farm, Heathfield.
 695 III. (10s.)—J. LEWIS, Cote Brook, Tarporley.
 696 R. N. & H. C.—MILTON-BODE, Cold Norton Farm, Kidmore End, Reading.

Class 398.—Black Orpington Cockerels. [8 entries, none absent.]

- 708 I. (30s.), & 705 II. (20s.)—J. LEWIS, Cote Brook, Tarporley.
 704 III. (10s.)—W. H. LAWRENCE, Chobham Poultry Farm, Woking.
 702 R. N. & H. C.—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.

Class 399.—Black Orpington Pullets. [7 entries, 1 absent]

- 710 I. (30s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.
 712 II. (20s.)—J. LEWIS, Cote Brook, Tarporley.
 718 III. (10s.)—O. SHEPHERD, Armaide, Carnforth.
 714 R. N. & H. C.—T. J. STABLES, Burton, Westmorland.

Class 400.—Spangled Orpington Cocks. [1 entries]

- 717 I. (30s.)—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Gray.
 718 II. (20s.)—ART C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington, Kent.
 719 III. (10s.)—MILTON-BODE, Cold Norton Farm, Kidmore End, Reading
 716 R. N. & H. C.—LAWRENCE BOOTH, Dingle Bank, Chester.

Class 401.—Spangled Orpington Hens. [5 entries, none absent.]

- 721 I. (30s.) & Ring.¹—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Gray.
 723 II. (20s.)—ART C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington, Kent.
 722 III. (10s.)—CAPT. MAX DE BATHE, Hartley Court, Reading
 724 R. N. & H. C.—MILTON-BODE, Cold Norton Farm, Kidmore End, Reading.

¹ Silver Serviette Ring given by the Variety Orpington Club for the best White Orpington in Classes 393-395

² Silver Serviette Ring given by the Variety Orpington Club for the best Spangled Orpington in Classes 400-403.

Award of Poultry Prizes at Liverpool, 1910. cvii

Class 402. - *Spangled Orpington Cockerels*. [4 entries]

- 728 I. (30s.) & R. N. for Ring. - ART. C GILBERT, Swanley Poultry Farm Co, Ltd., Wilmington, Kent
 726 II. (20s.) MRS A. M. BOOF Haute Terre, Haywards Heath
 727 III. (10s.) - CAPT. MAX DE BATHE, Hartley Court, Reading
 726 R. N. & H. C. - LAWRENCE BOOF, Dingle Bank, Chester

Class 403. - *Spangled Orpington Pullets*. [9 entries, none absent.]

- 731 I. (30s.) - WILLIAM H. COOK Model Poultry Farm, St Paul's Cray.
 726 II. (20s.), & 732 III. (10s.) - CAPT. MAX DE BATHE, Hartley Court, Reading.
 735 R. N. & H. C. - MILTON-BODE, Cold Norton Farm, Kidmore End, Reading

Class 404. - *Orpington Cocks, any other colour* [5 entries, none absent]

- 738 I. (30s.) - F. W. & J. B. BUNNEY, Barcombe, Sussex
 741 II. (20s.) - ART. C GILBERT, Swanley Poultry Farm Co, Ltd., Wilmington, Kent.
 742 III. (10s.) - WALTER BUXTON, Trinity Poultry Farm, Bentworth, Alton
 740 R. N. & H. C. - WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray

Class 405. - *Orpington Hens, any other colour* [2 entries]

- 743 I. (30s.) WILLIAM H. COOK, Model Poultry Farm, St Paul's Cray.
 744 II. (20s.) - ART. C. GILBERT, Swanley Poultry Farm Co, Ltd., Wilmington, Kent

Class 406. *Orpington Cockerels, any other colour* [4 entries]

- 745 I. (30s.) - WALTER BUXTON, Trinity Poultry Farm, Bentworth Alton.
 746 II. (20s.) - WILLIAM H. COOK, Model Poultry Farm, St Paul's Cray.
 748 III. (10s.) - MILTON-BODE Cold Norton Farm, Kidmore End, Reading.
 747 R. N. & H. C. - ART. C GILBERT, Swanley Poultry Farm Co, Ltd., Wilmington.

Class 407. - *Orpington Pullets, any other colour*. [6 entries, none absent.]

- 751 I. (30s.), & 753 II. (20s.) - MILTON-BODE, Cold Norton Farm, Kidmore End, Reading
 749 III. (10s.) - E. W. & J. B. BUNNEY, Barcombe, Sussex
 750 R. N. & H. C. - WALTER BUXTON, Trinity Poultry Farm, Bentworth, Alton.

Class 408. - *Minorca Cocks or Cockerels*. [10 entries, 5 absent.]

- 750 I. (30s.) - THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 764 II. (20s.) - WHITAKER & TOOTILL, Quarry Farm, Pool, Leeds
 763 III. (10s.) - ARTHUR GEORGE PITTS, Highbridge, Somerset.
 755 R. N. & H. C. - R. ANTHONY, Home Farm, Buxton, Chorley.

Class 409. - *Minorca Hens or Pullets*. [12 entries, 1 absent.]

- 766 I. (30s.) - FURSLAND BROTHERS, Bridgwater.
 766 II. (20s.) R. ANTHONY, Home Farm, Buxton, Chorley
 776 III. (10s.) - WHITAKER & TOOTILL, Quarry Farm, Pool, Leeds.
 767 R. N. & H. C. - THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.

Class 410. - *White Leghorn Cocks or Cockerels*. [10 entries, 2 absent.]

- 765 I. (30s.) - WHITAKER & TOOTILL Quarry Farm, Pool, Leeds.
 776 II. (20s.) - THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot
 782 III. (10s.) - PEARSON BROTHERS, 6, Mellor Street, Lineholme Todmorden.
 783 R. N. & H. C. - J. READER & SON, Leghorn House, Eecrick, York

Class 411. - *White Leghorn Hens or Pullets*. [9 entries, none absent.]

- 794 I. (30s.) - WILKINS & HARDWICK, 37 Thorn Tree Lane, New Hall, Burton-on-Trent.
 786 II. (20s.) R. ANTHONY, Home Farm, Buxton, Chorley.
 792 III. (10s.) W. O. STANBURY, Haddon House, Fainton.
 787 R. N. & H. C. - THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.

Class 412. *Brown Leghorn Cocks or Cockerels*. [7 entries, none absent.]

- 795 I. (30s.), & 798 II. (20s.) - R. ANTHONY, Home Farm, Buxton, Chorley.
 801 III. (10s.) - A. WIDD, Leghorn House, Kestown, Lancs.
 796 R. N. & H. C. CHARLES MOON, Chessington Poultry Farm, Surbiton.

Class 413. - *Brown Leghorn Hens or Pullets*. [11 entries, none absent.]

- 802 I. (30s.), & 805 R. N. & H. C. - R. ANTHONY, Home Farm, Buxton, Chorley.
 818 II. (20s.), & 810 III. (10s.) - L. O. VERRET, The Warren, Oxshott, Surrey.

Class 414. - *Black Leghorn Cocks or Cockerels*. [12 entries, 1 absent.]

- 819 I. (30s.) - GEORGE MELSON, 11 Halfacre Road, Hanwell.
 821 II. (20s.), & 815 III. (10s.) - JOSEPH FISH, Stanhill Quarry, Oswaldtwistle, Accrington.
 826 R. N. & H. C. - SMITH BROTHERS, 3 Hereford Street, Nelson.

— Silver Service Ring given by the Variety Orpington Club for the best Spangled Orpington in Classes 400-403

cviii *Award of Poultry Prizes at Liverpool, 1910.*

Class 415. —Black Leghorn Hens or Pullets. [9 entries, none absent.]

- 833 I. (30s.)—CLIFFORD WILLISON, Whitchurch, Salop.
839 II. (20s.)—JOHN HUBST, South Terrace, Glossop.
845 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley.
830 E. N. & H. C.—THOMAS PARKINSON, 7 Hammond Street, Nelson.

Class 416. —Leghorn Cocks or Cockerels, any other colour.

[9 entries, none absent.]

- 843 I. (30s.)—MR. VERREY, The Warren, Oxshott, Surrey
839 II. (20s.)—A. R. FISH, Holme Mead, Hutton Preston.
834 III. (10s.)—COLONEL H. T. L. ALLATT, Thumblands, Farnham.
836 E. N. & H. C.—G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lostock, Lancs.

Class 417. —Leghorn Hens or Pullets, any other colour. [1 entries, 1 absent.]

- I. (30s.)—G. M. & W. W. DOBSON, Bolton Model Poultry Farm, Lostock, Lancs.

Class 418. —Dorking Cocks or Cockerels, any variety.

[11 entries, none absent.]

- 847 I. (30s.)—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour.
856 II. (20s.)—GEORGE H. PROCTER, Flaws House, Durham.
849 III. (10s.)—JOHN DOBSON, 29 Church Street, Kirkham
835 E. N. & H. C.—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

Class 419. —Dorking Hens or Pullets, any variety.

[7 entries, none absent.]

- 864 I. (30s.), & 861 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.
858 III. (10s.)—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour.
863 E. N. & H. C.—JOHN BRENNAND, Baldersby Park, Thirsk.

Class 420. —Sussex Cocks, any variety. [9 entries, 2 absent.]

- 871 I. (30s.)—SANDERSON BROTHERS, Lower Lodge Poultry Farm, Billingshurst.
866 II. (20s.)—E. W. & J. B. BUNNEY, Barcombe, Sussex.
865 III. (10s.), & 869 E. N. & H. C.—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.

Class 421. —Sussex Hens, any variety [10 entries, none absent.]

- 875 I. (30s.)—E. W. & J. B. BUNNEY, Barcombe, Sussex.
880 II. (20s.), & 883 E. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts.
874 III. (10s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.

Class 422. —Sussex Cockerels, any variety. [7 entries, 1 absent.]

- 884 I. (30s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield
889 II. (20s.)—MRS. BRUCE WARD, Westwood Park, Droitwich.
886 III. (10s.)—WILLIAM HODGES, Onlands Farm, Weybridge.
887 E. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts.

Class 423. —Sussex Pullets, any variety [7 entries, none absent.]

- 893 I. (30s.)—WILLIAM HODGES, Onlands Farm, Weybridge.
891 II. (20s.), & 895 E. N. & H. C.—J. BAILY & SON, Heathfield Poultry Farm, Heathfield.
897 III. (10s.)—LORD ROTHSCHILD, Tring Park, Herts.

Class 424. —Ancona Cocks or Cockerels. [5 entries, none absent.]

- 900 I. (30s.), 903 II. (20s.), & 898 III. (10s.)—JOSEPH MADON, Park Villa, Ightenhill, Burnley.
901 E. N. & H. C.—THOMAS WHITTAKER, The Laund, Accrington.

Class 425. —Ancona Hens or Pullets. [8 entries, none absent.]

- 905 I. (30s.)—WILLIAM NELSON, Jumble Hall Bar, Baxenden, Accrington.
909 II. (20s.), & 906 III. (10s.)—JOSEPH MADON, Park Villa, Ightenhill, Burnley.
904 E. N. & H. C.—E. J. RICHARDSON LE BRUN, 29 Midvale Road, Jersey.

Class 426. —Brahma Cocks or Cockerels. [9 entries, 1 absent.]

- 916 I. (30s.) & R. N. for Special.¹) S. W. THOMAS, Glaslyn, Forest Fach, Swansea.
915 II. (20s.)—W. H. SMITH, Peets Lane, Southport.
911 III. (10s.)—SIDNEY FLETCHER, The Hollies, Osmaston Road, Derby.
919 E. N. & H. C.—ARTHUR E. WARD, Great Warford, Moberbey, Cheshire.

Class 427. —Brahma Hens or Pullets. [9 entries, 1 absent.]

- 923 I. (30s. & Special.¹)—TOM H. FURNESS, Carlton House, Chesterfield.
925 II. (20s.)—W. H. SMITH, Peets Lane, Southport.
920 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley.
922 E. N. & H. C.—SIDNEY FLETCHER, The Hollies, Osmaston Road, Derby.

¹ Special Prize of £1 is given by the Brahma Club for the best Brahma in Classes 426 and 427.

Class 422.—*Cochin Cocks or Cockerels.* [6 entries, none absent.]

- 934 I. (30s.)—GEORGE H. PROCTER, Flass House, Durham.
 933 II. (20s.)—ROBERT S. WILLIAMSON, The Grange, Hednesford.
 932 III. (10s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 930 R. N. & H. C.—MR. C. POWELL, Ovington Poultry Farm, Ovington.

Class 423.—*Cochin Hens or Pullets.* [6 entries, none absent.]

- 940 I. (30s.) & 938 II. (20s.)—GEORGE H. PROCTER, Flass House, Durham.
 939 III. (10s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 936 R. N. & H. C.—SIDNEY FLECHER, The Hollies, Osmaston Road, Derby.

Class 430.—*Campine Cocks or Cockerels.* [6 entries, 1 absent.]

- 943 I. (30s., & Medal.) J. LAGGE, Mill Green, Knighton, Radnorshire.
 945 II. (20s.)—GEORGE REISS, 15 Market Place, Kendal.
 942 R. N. & H. C.—MRS. E. LEWIS JONES, Heyope Rectory, Knighton, Radnorshire.

Class 431.—*Campine Hens or Pullets.* [7 entries, 1 absent.]

- 951 I. (30s. & R. N. for Medal.) & 947 R. N. & H. C.—DR. S. E. DUNKIN, 68 Studley Road, Olapham, N.W.
 948 II. (20s.)—R. EDWARDS, JUN., Staunton Old Court, Staunton-on-Arrow.
 953 III. (10s.)—GEORGE REISS, 15 Market Place, Kendal.

Class 432.—*Faverolle Cocks or Cockerels.* [11 entries, 1 absent.]

- 960 I. (30s.) & 964 III. (10s.)—T. H. JONES PARRY, Statham Poultry Farm, Warrington.
 959 II. (20s.)—TENNISON FAWKES, Leonard Stanley, Stonehouse, Glou.
 964 R. N. & H. C.—FRANK ALCOCK, Forthampton, Tewkesbury.

Class 433.—*Faverolle Hens or Pullets.* [9 entries, 1 absent.]

- 973 I. (30s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 966 II. (20s.)—O. H. BRADLEY, Tibberton, Glou.
 967 III. (10s.)—T. C. BRYNE, Beech Hill, Wyde Green, Birmingham.
 971 R. N. & H. C.—W. A. VEEN, Manney Brook, Lynn, Cheshire.

Class 434.—*Maline Cocks or Cockerels.* [8 entries, 1 absent.]

- 979 I. (30s.) & 977 II. (20s.)—MRS. TERROT, Widdington House, Cookham.
 974 III. (10s.) & 981 R. N. & H. C.—MAJOR F. HERBERT, Ty-Gwyn, Raglan.

Class 435.—*Maline Hens or Pullets.* [6 entries, 1 absent.]

- 982 I. (30s.), 981 II. (20s.), 986 III. (10s.), & 987 R. N. & H. C.—MAJOR F. HERBERT, Ty-Gwyn, Raglan.

Class 436.—*French Cocks or Cockerels, any other variety.*

[6 entries, none absent.]

- 991 I. (30s.)—S. W. THOMAS, Gilmfryn, Forest Park, Swansea. (Houdan.)
 992 II. (20s.)—P. HANSON, Caversham Heights, Reading. (Houdan.)
 990 III. (10s.)—J. W. STOKES, Whitely Shield, Whitfield. (Houdan.)
 993 R. N. & H. C.—S. W. THOMAS. (Orévé.)

Class 437.—*French Hens or Pullets, any other variety.*

[7 entries, none absent.]

- 994 I. (30s.) & 998 II. (20s.)—P. HANSON, Caversham Heights, Reading. (Houdan.)
 999 III. (10s.)—JOSEPH W. MOORE, Parkerland Farm, Hexham. (Houdan.)
 1000 R. N. & H. C.—S. W. THOMAS, Gilmfryn, Forest Park, Swansea. (Orévé.)

Class 438.—*Cocks or Cockerels, any other breed.* [14 entries, 1 absent.]

- 1001 I. (30s.)—MISS ASHWELL, Finmore, Buckingham. (Hamburg.)
 1013 II. (20s.)—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)
 1009 III. (10s.)—C. M. PICKLES, Knyfield House, Farby, Colne. (Hamburg.)
 1012 R. N. & H. C.—C. M. PICKLES. (Silver Spangle.)

Class 439.—*Hens or Pullets, any other breed.* [13 entries, none absent.]

- 1025 I. (30s.)—C. M. PICKLES, Knyfield House, Farby, Colne. (Silver Spangle.)
 1018 II. (20s.)—J. CLARKSON, JUN., The Green, Silsden. (Silkie.)
 1027 III. (10s.)—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)
 1024 R. N. & H. C.—R. WARREN LEWIS, 5 Mouthfield Road, Ruffeld Town. (Poland.)

Class 440.—*Old English Game Bantam Cocks.* [9 entries, none absent.]

- 1031 I. (30s.)—T. C. HEATH, Kesle, Newcastle, Staffs.
 1038 II. (20s.) & 1028 R. N. & H. C.—MISS B. B. BABCOCK, Birmingham, Clitheroe.
 1034 III. (10s.)—GORDON LEE, Wharfedale, Preston, Birkenhead.

¹ Silver Medal given through the Campine Club for the best Campine in Classes 430 and 431.

Class 441.—Old English Game Bantam Hens. [10 entries, none absent.]

- 1041 I. (30s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
1039 II. (20s.)—T. O. HEATH, Keels, Newcastles, Staffs.
1042 III. (10s.)—GORDON LEE, Wharfedale, Preston, Birkenhead.
1044 R. N. & H. C.—F. & W. WELLS, Boundary Bank, Kendal.

Class 442.—Modern Game Bantam Cocks, any colour. [9 entries, 1 absent.]

- 1051 I. (30s.)—W. & J. HEYS, West Villa, Facit, Rochdale.
1047 II. (20s.)—R. & T. BOND, 49 Sandon Road, Birkdale, Southport.
1050 III. (10s.)—JAMES GARDNER, Quarry House, Scarisbrick, Ormskirk.
1055 R. N. & H. C.—T. H. STRETCH, Ormskirk.

Class 443.—Modern Game Bantam Hens, any colour. [12 entries, 4 absent.]

- 1068A I. (30s.)—T. H. STRETCH, Ormskirk.
1065 II. (20s.)—J. LEWIS, Cote Brook, Turporley.
1069 III. (10s.)—JAMES GARDNER, Quarry House, Scarisbrick, Ormskirk.
1068 R. N. & H. C.—A. M. CRABTREE, Monkholme, Threshfield, Skipton-in-Craven.

Class 444.—Sebright Bantam Cocks. [5 entries, 1 absent.]

- 1069 I. (30s.)—JAMES H. SMITH, Peet's Lane, Southport.
1068 II. (20s.)—MISS E. D. PRESTON, Bay House, Ellal, Lancaster.
1067 III. (10s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
1070 R. N. & H. C.—MAJOR T. G. WILLIAMS, Manor House, Burton Joyce, Nottingham.

Class 445.—Sebright Bantam Hens. [10 entries, 1 absent.]

- 1078 I. (30s.)—MISS K. D. PRESTON, Bay House, Ellal, Lancaster.
1079 II. (20s.)—JAMES H. SMITH, Peet's Lane, Southport.
1074 III. (10s.)—T. O. HEATH, Keels, Newcastle, Staffs.
1081 R. N. & H. C.—AUBREY F. WOOTTON, Croft House, Epsom.

Class 446.—Brahma Bantam Cocks. [5 entries, none absent.]

- 1083 I. (30s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
1085 II. (20s.)—NORMAN ST. J. LONGEE, 14 Kirklands Avenue, Baildon.
1084 III. (10s.)—JAMES LEE, Egerton Villa, Heywood.
1082 R. N. & H. C.—A. M. CRABTREE, Monkholme, Threshfield, Skipton-in-Craven.

Class 447.—Brahma Bantam Hens. [3 entries.]

- 1087 I. (30s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
1089 II. (20s.) & 1088 III. (10s.)—JAMES LEE, Egerton Villa, Heywood.

Class 448.—Bantam Cocks, any other variety. [10 entries, none absent.]

- 1091 I. (30s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield. (White Pekin).
1090 II. (20s.)—A. BERTWISLE, 88 Chester Road, Northwich.
1097 III. (10s.)—MAJOR G. T. WILLIAMS, Manor House, Burton Joyce. (Frizzle).
1098 R. N. & H. C.—ROBERT S. WILLIAMSON, The Grange Hednesford. (Black Pekin).

Class 449.—Bantam Hens, any other variety. [15 entries, none absent.]

- 1101 I. (30s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield. (Black Pekin).
1106 II. (20s.)—J. F. ENTWISLE (Partridge Wyandotte).
1110 III. (10s.)—ERNEST STEVENS, The New Inn, Chiddingfold. (Indian Game).
1103 R. N. & H. C.—W. & J. H. HEYS, West Villa, Facit, Rochdale.

Class 450.—Aylesbury Drakes or Ducks, bred prior to 1910.

[6 entries, none absent.]

- 1117 I. (30s.)—JAMES HUNTLEY & SON, Hirsal Poultry Farm, Coldstream.
1116 II. (20s.)—HENRY DAY, Northumberland Villa, Malvern Link.
1119 III. (10s.)—W. WOODS, Carlton Road, Workop.
1120 R. N. & H. C.—J. Y. WHEATLEY, Appleton Roebuck, Bolton Percy.

Class 451.—Aylesbury Drakes or Ducks, bred in 1910. [4 entries, 1 absent.]

- 1125 I. (30s.)—J. Y. WHEATLEY, Appleton Roebuck, Bolton Percy.
1124 II. (20s.) & 1123 III. (10s.)—T. H. SPBAY, Rectory Farm, Beckingham, Newark.

Class 452.—Rouen Drakes or Ducks, bred prior to 1910.

[14 entries, 1 absent.]

- 1130 I. (30s.)—JAMES HUNTLEY & SON, Hirsal Poultry Farm, Coldstream.
1135 II. (20s.)—W. WOODS, Carlton Road, Workop.
1126 III. (10s.)—R. C. P. BRADSHAW, Tinwell, Stamford.
1134 R. N. & H. C.—THOMAS STRICKLAND, White Holme Farm, Carleton, Poulton-le-Fylde.

Class 453.—Rouen Drakes or Ducks, bred in 1910. [7 entries, 1 absent.]

- 1142 I. (30s.) & 1144 R. N. & H. C.—RICHARD MERCER, Brook House Farm, Halewood.
1139 II. (20s.)—R. C. P. BRADSHAW, Tinwell, Stamford.
1143 III. (10s.)—W. WOODS, Carlton Road, Workop.

Class 454.—Drakes or Ducks, any other breed, bred prior to 1910.

[13 entries, 2 absent.]

- 1117 I. (30s.) W. G. KINGWELL, Dartmoor Poultry Farm, South Brent. (Indian Runner.)
 1161 II. (20s.) —DR A. BARRY SYKES, The Manor House, Forinby. (Cayuga Drake.)
 1112 III. (10s.) CLIFFORD D. MILNE, Woodside Cottage, Whaley Bridge. (Pekin.)
 1158 R. N. & H. C. —W. WOODS, Carlton Road, Worksop. (Indian Runner Drake.)

Class 455. —Drakes or Ducks, any other breed, bred in 1910

[9 entries, 3 absent.]

- 1160 I. (30s.) & 1163 II. (20s.) WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent. (Indian Runner.)
 1164 III. (10s.) T. H. SPRAY, Rectory Farm, Beekingham, Newark. (Blue Orpington.)
 1158 R. N. & H. C. —A. H. BROWN, Bickley Hotel, Chislehurst. (Buff Orpington Drake.)

Class 456. —Ganders, any variety. [5 entries, none absent.]

- 1167 I. (30s.) —EDWARD BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.
 1171 II. (20s.) —W. WOODS, Carlton Road, Worksop. (Toulouse.)
 1170 III. (10s.) —J. Y. WHITLEY, Appleton Roebuck, Bolton Percy.
 1168 R. N. & H. C. —LORD HARLEIGH, Brogyntyn, Oswestry. (Embsden.)

Class 457. —Geese, any variety. [7 entries, 1 absent.]

- 1176 I. (30s.) —W. WOODS, Carlton Road, Worksop (Embsden.)
 1178 II. (20s.) —W. WOODS (Toulouse.)
 1172 III. (10s.) —EDWARD BIRCH, Edge Farm, Sefton, via Seaforth, Liverpool.
 1177 R. N. & H. C. —J. Y. WHITLEY, Appleton Roebuck, Bolton Percy.

Class 458. —Turkey Cocks. [9 entries, 1 absent.]

- 1187 I. (30s.) W. WOODS, Carlton Road, Worksop
 1184 II. (20s.) F. G. SHERINGHAM, South Woolton, King's Lynn
 1180 III. (10s.) EDWARD KENDRICK, Weeford House, Lichfield.
 1186 R. N. & H. C. —STUART SMITH, Manor House, Wilford, Nottingham.

Class 459. —Turkey Hens. [4 entries.]

- 1191 I. (30s.) —SIR BERKELEY SHEFFIELD, BT., Normanby Park, Doncaster.
 1188 II. (20s.) —M. KENDRICK, Weeford House, Lichfield.
 1190 III. (10s.) MISS A. MARSH, Holloway, Craven Arms.
 1186 R. N. & H. C. —TOM LEATHES, Wern Fawr, Ruthin.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 460.—Boxes of Twelve 2-lb. Rolls or Squares of Butter, made with not more than 1 per cent. of salt. [5 entries, none absent.]

- 2 I. (4s.) —MRS MCINTOSH, Havering Park, Romford.
 1 II. (2s.) —A. R. HOOKE Pixford, Puddingham, Wolverhampton
 3 III. (1s.) —CHARLES FIDEBAUX, The Grange, Moulouba, Dorset
 4 R. N. & H. C. —MOULHEAD CO-OPERATIVE DAIRY SOCIETY, LTD., Limerick Junction

Class 461. —Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses. [19 entries, 2 absent.]

- 7 I. (4s.) —D. FORSTER, The Walls, Henley, Hesham.
 20 II. (2s.) —W. G. M. TOWNLEY, Hard Grange, Grange-over-Sands.
 12 III. (1s.) —MRS. MCINTOSH, Havering Park, Romford.
 11 R. N. & H. C. —MISSES KIRKE & MALING, Twentylands, Easterton, Devizes.

Class 462.—Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 461. [23 entries, 2 absent.]

- 48 I. (4s.) —THE HON. F. G. WYNN, Glynllivon Park, Carnarvon.
 31 II. (2s.) —MRS. FAITH HOLDEN, Nixon's Farm, Deana, Bolton.
 25 III. (1s.) —JOHN R. BANKS, Houghton Hall, Northop, Flint.
 30 R. N. & H. C. —MRS. H. PINDLEBURY, Brook Fold Farm, Harwood, Bolton.

Class 463.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Channel Island, Deron, or South Deron Cattle and their crosses.* [19 entries, 2 absent.]

- 49 I. (£2.) - D FORSTER, The Walls, Senley, Hoxham.
59 II. (£1.) - MRS. G. B. ROBINSON, Poole House Farm, Nantwich.
81 III. (10s.) - W. G. M. TOWNLEY, Hard Cragg, Grange-over-Sands.
85 E. N. & H. C. - C. WHICHER, West Stake, Chichester.

Class 464.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 463.* [31 entries, 1 absent.]

- 92 I. (£2.) - MRS. M. STOKES, Heddon House Dairy, Wylam-on Tyne.
78 II. (£1.) - THELION A. HOLLAND-HIBBERT, Munden, Walsford.
77 III. (10s.) - MRS. FAITH HOLDEN, Nixon's Farm, Deane, Bolton.
72 E. N. & H. C. - MRS. PETER HALL, Bolton House, Treales, Kirkham.

Class 465.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.* [9 entries, none absent.]

- 104 I. (£2.) - MRS. G. B. ROBINSON, Poole House Farm, Nantwich.
101 II. (£1.) - MISS MARY MORGAN, Bryncoch, Garraethen.
97 III. (10s.) - COL. R. C. HARE, Rymersdon Hall, Atherington.
105 E. N. & H. C. - J. H. WALKER, Whitlock's End, Dymock.

Class 466.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds and packed in non-returnable boxes for transmission by rail or parcel post.* [7 entries, 1 absent.]

- 111 I. (£2.) - MRS. G. B. ROBINSON, Poole House Farm, Nantwich.
109 II. (£1.) - MRS. MCINTOSH, Havering Park, Romford.
108 III. (10s.) - WILLIAM LITCHFIELD, Ballymaloe, Cloyne, Co. Cork.
107 E. N. & H. C. - A. B. HOOLE, Paxford, Pittingham, Wolverhampton.

Cheese.¹

Made in 1910.

Class 467.—*Three Lancashire Cheeses, not over 12 lb. each.*
[19 entries, 2 absent.]

- 126 I. (£5.) - JOSEPH SHEPHERD, Lower House Farm, Ingelwhite, Preston.
115 II. (£3.) - JOHN BEE Bulnape Hall, Goomsugh, Preston.
113 III. (£2.) - LAWRENCE BAILEY, Bryan's Farm Lee, Preston.
129 IV. (£1.) - EDWIN TOWNSON, Swillbrook Grange, Bilton, Preston.
122 E. N. & H. C. - WILLIAM KNOWLES, Higher Park Farm, Myerscough, Preston.

Class 468.—*Three Lancashire Cheeses of about 120 lb. in all, made on a Farm of not exceeding 100 statute acres.* [13 entries, 1 absent.]

- 138 I. (£10, E. N. for Cup² & E. N. for Champion.³) - JAMES COWPER, Fir Trees Farm, Goomsugh, Preston.
140 II. (£5.) - JOHN PROCTER, Lane Side Farm, Alston, Preston.
132 III. (£3.) - HUGH ALMOND, Millings Farm, Outforth, Preston.
144 IV. (£2.) - EDWIN TOWNSON, Swillbrook Grange, Bilton, Preston.
143 E. N. & H. C. - WILLIAM NUDDEL, Ivy Farm, Sulwick, Preston.

Class 469.—*Three Lancashire Cheeses of about 120 lb. in all, made on a Farm exceeding 100 statute acres.* [19 entries, 2 absent.]

- 154 I. (£10, Cup.² & Champion.³) - WILLIAM KIRBY, Outforth Hall, Preston.
155 II. (£5.) - W. KNOWLES, Higher Park Farm, Myerscough, Preston.
157 III. (£3.) - JOSEPH SHEPHERD, Lower House Farm, Ingelwhite, Preston.
159 IV. (£2.) - WILLIAM STUART,
162 E. N. & H. C. - GEORGE WHITAKER & SON, Gibson's Farm, Kirklands, Garstang.

¹ £100 towards the Prizes for Lancashire and Cheshire Cheeses were given by the Liverpool Local Committee.

² The Royal Lancashire Society's "Elkington" Challenge Cup, value Twenty-five Guineas, for the best exhibit in Classes 467-469.

³ Champion Cup, value £10 10s., given by the Federation of Lancashire and Cheshire Agricultural Societies, for the best exhibit in Classes 467-469 made by a resident in the County of Lancaster.

Award of Prizes at Liverpool, 1910.

cxlii

Class 470.—Three Coloured Cheshire Cheeses, not over 40 lb. each.

[16 entries, 1 absent.]

- 168 I. (£10.)—JOSEPH DYER, Brereton Park, Hargrave, Chester.
 174 II. (£5.) J. ASTON SALMON, Strutton Old Hall, Malpas.
 172 III. (£3.) MRS. LOVEKIN, Bowes (late, Bunbury, Tarporley.
 179 IV. (£2.)—JOHN WILLIAMS, Hollingreen, Sealds, Nantwich.
 178 R. N. & H. C.—(GEORGE WEST,

Class 471.—Three Coloured Cheshire Cheeses, over 40 lb. each.

[77 entries, 13 absent.]

- 191 I. (£10. & Champion.)—PERCY V. COOKE, Tuitenhall Hall, Chester.
 200 II. (£5 & R. N. for Champion.)—JOHN DUTTON, Swanley Hall, Nantwich.
 233 III. (£3.) (G. H. MULLOCK, Poulton Hall, Pulford, Cheshire.
 211 IV. (£2.) GEORGE PLATT, Eaton, Tarporley.
 245 R. N. & H. C.—HUGH RUTTER, Green Farm, Aldersey, Handley, Chester.

Class 472.—Three Uncoloured Cheshire Cheeses, not over 40 lb. each.

[16 entries, 3 absent.]

- 286 I. (£10.)—W. R. HUNTBACH, Dodsgreen, Aston, Nantwich.
 293 II. (£5.) JOSEPH DYER, Brereton Park, Hargrave, Chester.
 285 III. (£3.)—JOHN HORTON, Northwood House, Ellesmere.
 261 IV. (£2.)—SAMUEL DUTTON, Oak Farm, Haughton, Tarporley.
 299 R. N. & H. C.—J. ASTON SALMON, Strutton Old Hall, Malpas.

Class 473.—Three Uncoloured Cheshire Cheeses, over 40 lb. each.

[53 entries, 5 absent.]

- 288 I. (£10. & Cup.)—STEPHEN DICKIN, Hugmoor House, Wrexham.
 316 II. (£5.)—GEORGE PLATT, Eaton, Tarporley.
 296 III. (£3.)—W. H. HOBSON,
 325 IV. (£2.) MRS. M. WALLEY, Frankton, Oswestry.
 275 R. N. & H. C.—WILLIAM BEBBINGTON, Hook Farm, Nantwich.

Class 474.—Three Cheddar Cheeses, of not less than 50 lb. each.

[7 entries, none absent.]

- 327 I. (£5.)—JOHN CAMPBELL, Dromore Dairy, Kirkcudbright.
 337 II. (£3.)—ROBERT STEVENSON, Boghead, Galston, Ayrshire.
 320 III. (£2.)—A. W. DAVIS, Red House Farm, Stratton-on-the-Fosse, Bath.
 328 R. N. & H. C. ALEXANDER CROSS, Knockdon Farm, Maybole.

Class 475.—Three Cheddar Truckles. [10 entries, none absent.]

- 347 I. (£3.) ROBERT STEVENSON, Boghead, Galston, Ayrshire.
 344 II. (£2.)—H. H. PICKFORD, Westlands Farm, Melksham.
 341 III. (£1.)—ALEXANDER CROSS, Knockdon Farm, Maybole.
 346 R. N. & H. C. W. C. SPENNER, Manor Farm, Hillfield, Ostlinton.

Class 476.—Three Stilton Cheeses. [11 entries, none absent.]

- 355 I. (£2.)—HENRY MORRIS, Saxelbye, Melton Mowbray.
 352 II. (£1.)—MRS. C. FAIRBROTHER, Beeby, Leicester.
 350 III. (£1.)—BELVOIS VALE DAIRIES, Harby, Melton Mowbray
 354 R. N. & H. C.—JOSEPH HALL, Stathern, Melton Mowbray.

Class 477.—Three Wensleydale Cheeses, Stilton Shape. [4 entries, 1 absent.]

- 362 I. (£3.)—ALFRED ROWNTREE, Field House, Kirby Overblow, Pannal, Yorks.
 364 II. (£2.)—MRS. WILLIS, Manor House, Carperby, Yorks.
 368 III. (£1.)—WENSLEYDALE PURE MILK SOCIETY, LTD, Northallerton.

Class 478.—Three Double Gloucester Cheeses, of not less than 22 lb. each.

[7 entries, none absent.]

- 370 I. (£4.)—JOSEPH WARREN, Pennard Hill, East Pennard, Shepton Mallet.
 366 II. (£3.) ROBERT J. HAINE, Tower Farm, Little Wolford, Shipston-on-Stour.
 368 III. (£2.) CROXDEN DAIRY ASSOCIATION, Croxden, Leicester, Stafford.
 371 R. N. & H. C.—WILLIAM H. WEEKES, Sundays Hill Farm, Faldfield.

Class 479.—Three Staffordshire or Derbyshire Cheeses [3 entries, 1 absent.]

- 374 I. (£3.)—Y. G. VEEN, Yoxall, Burton-on-Trent.
 372 II. (£2.) CROXDEN DAIRY ASSOCIATION, Croxden, Leicester, Stafford.

¹ Champion Cup, value £10 10s., given by the Federation of Lancashire and Cheshire Agricultural Societies for the best exhibit in Classes 470-478 made by a resident in the County of Chester.

² Silver Cup, value £5 5s., given by the Denbighshire and Flintshire Agricultural Society for the best exhibit in Classes 470-478 made by a resident in Denbighshire or Flintshire.

Class 480.—*Three Caerphilly Cheeses* [5 entries, none absent]

- 375 I. (£3.)—MRS JOHN C ADLAM, East Horrington, Wells
 376 II. (£2.)—C & G PRIDEAUX, The Chantry, Stalbridge
 378 III. (£1.)—CHARLES HARRIS & SON, Rectory Farm, Slunbridge, Stonehouse

Cider and Perry.

N.B.—The names of the Fruits from which the Cider or Perry is stated by the Exhibitor to have been made are added after the address of the Exhibitor. In Classes 481, 482, 487, and 488 the date of making is also given.

Class 481.—*Casks of Dry Cider, of not less than 18, and not more than 30 gallons, made in 1909.* [8 entries, none absent]

- 384 I. (£5.)—HENRY THOMSON & CO LTD, Southenda Newent, Glos (Mixed Fruit)
 381 II. (£3.)—D J CROFTS & SON, Sutton Montis, Sparkford, Somerset (Royal and Chisel Jersey, Redstreak, Kingston Black, and Cap of Liberty)

Class 482.—*Casks of Sweet Cider, of not less than 18, and not more than 30 gallons, made in 1909.* [11 entries, none absent]

- 394 I. (£5.), & 395 III. (£2.)—THOMAS STONE, Axe Vale Cider Works, Axminster (Mixed Fruit)
 390 II. (£3.)—HERBERT J. DAVIS, Sutton Montis, Sparkford, Somerset (Royal and White Jersey, Favourite, and Cap of Liberty)
 391 R. N. & H. C.—HERBERT J. DAVIS.

Class 483.—*Casks of Cider, of not less than 18, and not more than 30 gallons, made previous to 1909* [1 entries, none absent]

- 401 I. (£5.)—THOMAS STONE, Axe Vale Cider Works, Axminster (Mixed Fruit, 1908)

Class 484.—*One Dozen Bottles of Dry Cider, made in 1909.*

[13 entries, none absent.]

- 414 I. (£4.)—TILLEY BROS, East Compton, Shepton Mallet (White Jersey and Kingston Black)
 413 II. (£2.)—TILLEY BROS (White and Red Jersey, Kingston Black, and Horner.)
 405 III. (£1.)—D. J CROFTS & SON, Sutton Montis, Sparkford, Somerset. (Royal and Chisel Jersey, Redstreak, Kingston Black, and Cap of Liberty)
 406 R. N. & H. C.—D J CROFTS & SON

Class 485.—*One Dozen Bottles of Sweet Cider, made in 1909*

[17 entries, none absent]

- 425 I. (£4, & Champion.)¹—R. H RIDLER & SON, Clehonger Manor, Hereford. (Fox whelp and Kingston Black)
 416 II. (£2.)—SIR J H HEATHCOTE ANONY, Br, Knightsbridge Court, Tiverton (Mixed Fruit)
 418 III. (£1.)—D J CROFTS & SON, Sutton Montis, Sparkford, Somerset (Royal and White Jersey, White Close Pippin, Redstreak, and Kingston Black.)
 427 R. N. & H. C. THOMAS STONE, Axe Vale Cider Works, Axminster

Class 486.—*One Dozen Bottles of Cider, made previous to 1909*

[10 entries, none absent.]

- 438 I. (£4, & R. N. for Champion.)¹ THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit, 1908)
 437 II. (£2.)—R. H RIDLER & SON, Clehonger Manor, Hereford (Foxwhelp and Kingston Black, 1908)
 411 III. (£1.)—TILLEY BROS, East Compton, Shepton Mallet (White Jersey, Horner and Kingston Black, 1908)
 435 R. N. & H. C.—D J CROFTS & SON, Sutton Montis, Sparkford

Class 487.—*One Dozen Bottles of Dry Perry* [8 entries, none absent]

- 444 III. (£1.)—HENRY ROBBINS & SON, Whley, Stroud (Butt, 1908)

Class 488.—*One Dozen Bottles of Sweet Perry* [11 entries, none absent.]

- 458 I. (£4.)—TILLEY BROS, East Compton Shepton Mallet (Oldfield and Butt, 1908)
 450 II. (£2.) TILLEY BROS (Oldfield 1908)
 453 III. (£1.)—HENRY MASON, Withington, Hereford (Tuynton Squash, 1908.)
 456 R. N. & H. C.—HENRY THOMSON & CO, LTD, Southenda, Newent

¹ Challenge Cup given by the Cider Growers of the West of England for the best exhibit in Classes 481-486

Wool.

Of 1910 (Wp.)

Class 489. *Three Fleeces of Leicester or Border Leicester Wool.* [6 entries, none absent.]

- 486 I. (£3.) JOHN W. HARRISON, Underpark, Lealholm, Gosmont. (Leicester Gimmer Hogs.)
485 II. (£2), 483 III. (£1), & 484 B. N. & H. C. -GEORGE HARRISON, Galford Hall, Darrington (Leicester Yearling Hogs.)

Class 490. *Three Fleeces of Lincoln Wool.* [3 entries.]

- 470 I. (£3.) -WILLIAM B SWALLOW, Wootton Lawn, Ulceby. (Yearlings.)
468 II. (£2), & 469 III. (£1.)-HENRY DUDDING, Riby Grove, Great Grimsby. (Hogs.)

Class 491. *Three Fleeces of Kent or Romney Marsh Wool.* [18 entries, none absent.]

- 472 I. (£3.) CHARLES FILE, Elham, Canterbury (Yearling Ewes)
477 II. (£2.) -L H & G. W. FINN, Westwood Court Faversham. (Yearlings.)
478 III. (£1.) -L H. & G. W. FINN. (Two-Shear Sheep)
481 B. N. & H. C. -J E. QUIMFED, The Firs, Cheriton, Kent. (Wethers.)

Class 492. *Three Fleeces of Wensleydale Wool.* [9 entries, none absent.]

- 491 I. (£3.) -R. CHESTER, Low Moor Farm, Ripon. (Hogs)
491 II. (£2.) THOMAS PARLOUR, Middle Farm, Dalton-on-Tees. (Hogs.)
489 III. (£1.)-LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale. (Ewe Hogs.)
498 B. N. & H. C. -THE EXORS. OF THE LATE T WILLIS, Manor House, Carperby

Class 493. *Three Fleeces of any other Long Wool.* [13 entries, none absent.]

- 501 I. (£3), & 502 B. N. & H. C. F. H. MERYON, Doniford, Watchet (Devon Long Wool Yearlings.)
505 II. (£2.) MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard. (Devon Long Wool Yearlings.)
510 III. (£1.)-FREDERICK WHITE, Torweston, Williton, Somerset. (Devon Long Wool Yearling Ewe Hogs)

Class 494. *Three Fleeces of Southdown Wool.* [3 entries.]

- 511 I. (£3), 512 II. (£2), & 513 III. (£1.)-LORD CALTHORPE, Elvetham Park, Winchfield. (Yearlings.)

Class 495. *Three Fleeces of Shropshire Wool.* [6 entries, none absent.]

- 519 I. (£3), & 518 II. (£2.)-HALE & SON, Atherstone. (Yearling Hogs.)
518 III. (£1.) -A. N. HENDERSON, Street Aston House, Lutterworth. (Yearling Ewes.)
515 B. N. & H. C. -FRANK D. BACH, Ombury, Oraven Arms. (Yearlings.)

Class 496. *Three Fleeces of any other Short Wool.* [15 entries, none absent.]

- 523 I. (£3), & 522 III. (£1.) -W. R. FLOWER, West Stafford, Dorchester. (Dorset Horn Shearling Ewes.)
524 II. (£2.) DAVID J THOMAS, Talachddu, Brecon. (Ryeland Yearling Ewes.)
520 B. N. & H. C. HUGH A. CHRISTY, Llangoed Castle, Llynwen.

Class 497. *Three Fleeces of Welsh Wool.* [15 entries, none absent.]

- 512 I. (£3.) -TOM LEATHIES, Wern Faur, Ruthin. (Yearling Ewes.)
513 II. (£2.) -TOM LEATHIES (Yearling Wethers.)
527 III. (£1), & 528 B. N. & H. C. -H. O. ELLIS, Tynchendra, Bangor. (Yearling Hogs.)

Class 498. *Three Fleeces of Cheviot Wool.* [6 entries, none absent.]

- 552 I. (£3.) ROBERT GRAHAM, Auchengaswel, Twynholm. (Yearling Hogs.)
555 II. (£2.) JACOB ROBSON, Ryrcow, Otterburn (Yearling Hogs.)
553 III. (£1.) TOM LEATHIES, Wern Faur, Ruthin (Yearling Ewes and Wethers.)
554 B. N. & H. C. -JACOB ROBSON. (Two Shear Ewes)

Class 499. *Three Fleeces of Scotch Wool.* [5 entries, none absent.]

- 558 I. (£3.) ROBERT GRAHAM, Auchengaswel, Twynholm (Yearling Hogs.)
557 II. (£2.) JOHN DARGUE, Burnside Hall, Kendal. (Yearling Ewes.)
556 III. (£1.)-JOHN DARGUE (Two-Shear Ewes.)
560 B. N. & H. C. -PHILIP SOWERBY, Bank Hall, Newbiggin, Carlisle.

HIVES, HONEY, AND BEE APPLIANCES.¹

Class 500.—*Collections of Hives and Appliances.* [6 entries, none absent.]

- 561 I. (£4.)—JAS LEE & SON, 1 Martineau Road, Highbury
 560 II. (£2.)—E. H. TAYLOR, Welwyn, Herts.
 562 III. (£1.)—W. P. MEADOWS, Syston, Leicester
 563 R. N. & H. C.—GEORGE ROSE, 50 Great Charlotte Street, Liverpool.

Class 501.—*Frame Hives, for general use, unpainted.* [8 entries, none absent.]

- 561 I. (20s.)—H. G. TUNSTALL, Ashfield, Rainhill.
 567 II. (15s.)—ABBOTT BROS., Southall.
 580 III. (10s.)—E. H. TAYLOR, Welwyn, Herts
 573 R. N. & H. C.—GEORGE ROSE, 50 Great Charlotte Street, Liverpool

Class 502.—*Frame Hives, for Cottager's use, unpainted.*

[5 entries, none absent.]

- 583 I. (20s.) JAS LEE & SON, 4 Martineau Road, Highbury
 586 II. (15s.)—E. H. TAYLOR, Welwyn, Herts.
 584 III. (10s.)—W. P. MEADOWS, Syston, Leicester

Class 503.—*Honey Extractors.*² [5 entries, none absent.]

- 587 I. (15s.)—W. P. MEADOWS, Syston, Leicester.
 580 II. (10s.)—MRS S. J. B. SEADON, Apsley, Bromley
 591 Certificate of Merit.—E. H. TAYLOR, Welwyn, Herts.

Class 504.—*Observatory Hives, with not less than three Frames, with Bees and Queen.* [6 entries, none absent.]

- 595 I. (20s.) JAS LEE & SON, 4 Martineau Road, Highbury.
 593 II. (15s.)—W. DIXON, 27 Central Road, Kirkstall, Leeds.
 597 III. (10s.)—E. H. TAYLOR, Welwyn, Herts.
 596 R. N. & H. C.—J. PEARMAN, Penny Long Lane, Derby.

Class 505.—*Any appliances connected with Bee-keeping, to which no prize has been awarded at a Show of the R.A.N.H.* [3 entries none absent.]

- 598 I. (10s.)—JAMES LEE & SON, 4 Martineau Road, Highbury
 600 Certificate of Merit.—W. P. MEADOWS, Syston, Leicester.

Class 506.—*Granulated Honey.*³ [1 entry.]

- 601 II. (15s.)—A. S. DELL, Leigh, Lancs

Class 507.—*Comb Honey.*⁴ [5 entries, 2 absent.]

- 605 I. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 602 II. (15s.)—N. GRANT BAILEY, Wadenhoe, Hough Green, Chester
 603 III. (10s.)—H. C. GIBSON, Ballygowan, Belfast.

Class 508.—*Run or Extracted Light-coloured Honey.* [11 entries, 2 absent.]

- 618 I. (20s.)—H. W. MEYMOUR, West Street, Alford.
 615 II. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
 609 III. (10s.)—A. S. DELL, Leigh, Lancs
 614 R. N. & H. C.—R. MORGAN, The Apley, Cowbridge.

Class 509.—*Run or Extracted Medium or Dark-coloured Honey.*

[5 entries, 1 absent.]

- 621 I. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 618 II. (15s.)—N. GRANT BAILEY, Wadenhoe, Hough Green, Chester.
 619 III. (10s.)—A. S. DELL, Leigh, Lancs.

Class 510.—*Granulated Honey.* [7 entries, 1 absent.]

- 627 I. (20s.)—A. W. WREATHINGHOOG, Willoughton, Lincoln.
 623 II. (15s.)—J. WOODS, Nettleworth Manor, Mansfield.
 626 III. (10s.) J. PEARMAN, Penny Long Lane, Derby.
 628 R. N. & H. C.—NEVILLE WITHEW, Knockin, Oswestry.

¹ Prizes given by the British Bee Keepers' Association.

² Prizes given by Mr. T. W. Cowan.

³ Entries in this Class can only be made by members of the Lancashire Bee Keepers Association.

⁴ Entries in Classes 507 to 510 can only be made by residents in Cheshire, Cumberland, Derbyshire, Durham, Herefordshire, Lancashire, Leicestershire, Lincolnshire, Monmouthshire, Northumberland, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Westmorland, Worcestershire, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.

Class 511.—*Comb Honey*.¹ [8 entries, 1 absent.]

- 073 I. (20s.) R. BROWN & SON, Flora Apiary, Somersham.
 075 II. (15s.) G. W. DYER, Jampton, Newbury.
 081 III. (10s.) MISS F. E. BARKER, Alban's Farm, Barnston, Dunmow.
 082 E. N. & H. C.—R. H. BAYNES, 51 Bridge Street, Cambridge.

Class 512.—*Run or Extracted Light-coloured Honey*. [9 entries, 1 absent.]

- 038 I. (20s.) R. BROWN & SON, Flora Apiary, Somersham.
 079 II. (15s.) R. H. BAYNES, 51 Bridge Street, Cambridge.
 013 III. (10s.)—S. G. S. LEIGH, The Nurseries, Broughton, Hants.
 042 E. N. & H. C.—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.

Class 513.—*Run or Extracted Medium or Dark-coloured Honey*.
[5 entries, 1 absent.]

- 018 I. (20s.)—C. F. HILLSON, Cranford, Kettering.
 019 II. (15s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 050 III. (10s.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.

Class 514.—*Granulated Honey*. [3 entries.]

- 034 I. (20s.)—R. BROWN & SON, Flora Apiary, Somersham.
 083 II. (15s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 052 III. (10s.)—MISS F. E. BARKER, Alban's Farm, Barnston, Dunmow.

Class 515.—*Frames of Comb Honey, for extracting*. [5 entries, 3 absent.]

- 075 II. (15s.)—MISS F. E. BARKER, Alban's Farm, Barnston, Dunmow.

Class 516.—*Heather Honey*. [6 entries, 1 absent.]

- 005 I. (20s.) J. PEARMAN, Penny Long Lane, Derby.
 003 II. (15s.) M. J. LAMBOLL, Sydenham, Chiddingfold.
 001 III. (10s.)—BURN & BOTHAM, Phoenix House, Whitby.
 002 E. N. & H. C.—W. DIXON, 27 Central Road, Kirkgate, Leeds.

Class 517.—*Heather Mixture Extracted Honey*. [1 entries.]

- 009 I. (20s.) J. PEARMAN, Penny Long Lane, Derby.
 008 II. (15s.)—W. DIXON, 27 Central Road, Kirkgate, Leeds.
 006 III. (10s.)—W. E. BROOKING, Marlborough, Kingsbridge.
 007 E. N. & H. C.—A. S. DELL, Leigh, Lancs.

Class 518.—*Best and Most Attractive Displays of Honey*.
[6 entries, none absent.]

- 072 I. (30s.)—A. S. DELL, Leigh, Lancs.
 076 II. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 070 III. (10s.)—R. BROWN & SON, Flora Apiary, Somersham.
 074 E. N. & H. C.—W. DIXON, 27 Central Road, Kirkgate, Leeds.

Class 519.—*Exhibits of not less than 2 lb. of Wax, the Produce of the Exhibitor's Apiary*. [9 entries, 2 absent.]

- 080 I. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 084 II. (7s. 6d.)—GOODBURN BROTHERS, Rock Road, Millfield, Peterborough.
 081 III. (5s.)—E. H. WMILES, Floor Green, Wilmington, Kent.
 078 E. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham.

Class 520.—*Exhibits of not less than 3 lb. of Wax, the Produce of the Exhibitor's Apiary*. [6 entries, 2 absent.]

- 009 I. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 088 II. (7s. 6d.)—GOODBURN BROTHERS, Rock Road, Millfield, Peterborough.
 085 III. (5s.) J. BERRY, Llanrwst, N. Wales.
 087 E. N. & H. C.—F. W. FRUSHER, Swiss Apiary, Crowland, Peterborough.

Class 521.—*Quarts of Honey Vinegar*. [4 entries, none absent.]

- 002 I. (7s. 6d.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 003 II. (5s.)—J. PEARMAN, Penny Long Lane, Derby.
 001 Certificate of Merit.—A. S. DELL, Leigh, Lancs.

Class 522.—*Quarts of Mead*. [3 entries.]

- 006 I. (7s. 6d.) JONES BROS, Monks Acre Apiary, Andover.
 005 II. (5s.) R. BROWN & SON, Flora Apiary, Somersham.
 007 Certificate of Merit.—J. PEARMAN, Penny Long Lane, Derby.

¹ Entries in Classes 511-514 can only be made by residents in Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Cornwall, Devon, Dorset, Essex, Gloucestershire, Hampshire, Herefordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Northamptonshire, Oxfordshire, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

Class 523.—*Exhibits of a practical or interesting nature connected with Bee-culture, not mentioned in the foregoing Classes.* [2 entries.]

699 I. (10s.).—A. S. DELL, Leigh, Lancs.

698 Certificate of Merit.—W. DIXON, 27 Central Road, Kirkgate, Leeds.

Class 524.—*Exhibits of a scientific nature, not mentioned in the foregoing Classes, to which no prize has been awarded at a Show of the R.A.S.B.* [2 entries.]

701 I. (10s.).—GEORGE ROSE, 50 Great Charlotte Street, Liverpool.

700 Certificate of Merit.—W. DIXON, 27 Central Road, Kirkgate, Leeds.

BUTTER-MAKING COMPETITIONS.

Tuesday, June 21st [15 competitors.]

3 I. (£5).—MISS E. M. BLACKBURN, Our-side Dairy Farm, Mount Pleasant Road, Wallasey, Cheshire.

5 II. (£3).—MISS A. G. LEIGH, Mount Farm Chorlton, Chester.

1 { Equal Third } MISS LIZZIE BENNION, Dairy Bank Farm n, Barthomley, Crewe.

2 { Prize of £1 10s. } MISS R. A. BIRKETT, Causeway End, Plumpton, Ulverston

6 V. (10s.).—MISS GRACE LEWIS, Oak Hill, Oak-in-Churchiel.

Wednesday, June 22nd [15 competitors.]

30 I. (£5).—MISS J. F. STEPHEN, Willaston, Nantwich.

21 II. (£3).—MISS BERTHA GLEDHILL, Brook Farm, Aale, Chelford.

23 III. (£2).—MISS DOROTHY HARBOP, Withington House, Chelford.

24 IV. (£1).—MISS H. MASSEY, Higher Mutton Farm, Marton, Chelford.

17 { Equal Fifth } MISS NELLE BENNION, Dairy Bank Farm Barthomley, Crewe.

26 { Prize of 5s. } MISS M. E. SHUTTLEWORTH, Kneowback Farm, Outon, Lancaster.

Thursday, June 23rd. [15 competitors.]

43 I. (£5 and Cups).—MISS HETTIE PARKER, Old Holts Farm, Harwood, Bolton.

44 II. (£3).—MISS M. L. TRELFA, Yew Tree Farm, Wimboldley, Middleswich.

36 III. (£2).—MISS F. M. DONE Village Farm Keckwich, Daresbury, Warrington.

45 IV. (£1).—MISS GERTRUDE WILCOX, The Dairy, Stonyhurst College, Blackburn.

32 V. (10s.).—MISS D. B. BRADSHAW, The Rookery, Sandbach.

Champion Class.—Saturday, June 25th.

23 I. (£5).—MISS DOROTHY HARBOP, Withington House, Chelford.

44 II. (£3).—MISS M. L. TRELFA, Yew Tree Farm, Wimboldley, Middleswich.

43 III. (£2).—MISS HETTIE PARKER, Old Holts Farm, Harwood, Bolton.

17 IV. (£1).—MISS NELLE BENNION, Dairy Bank Farm Barthomley, Crewe.

26 V. (10s.).—MISS M. E. SHUTTLEWORTH, Kneowback Farm Outon Lancaster.

HORSE-SHOING COMPETITIONS.

Class 1. —Hunters. [25 competitors.]

15 I. (£3 10s. & G. M.).—CHARLES MARSHALL, A.F.O., R.S.S., Otley Road Forge, Garsdale, Leeds.

2 II. (£3, & S. M.).—THOMAS DRIGHTON, R.S.S., 81 East Parade, Harrogate.

20 III. (£2 10s., & B. M.).—J. C. MORRIS, A.F.O., R.S.S., Ilmley-in-Arden.

8 IV. (£2).—HARRY JONES, R.S.S., The Forge, The Hendre, Monmouth.

21 V. (£1 10s.).—THOMAS NORTHWOOD, A.F.O., R.S.S., High Street Shoeing Forge, Cleobury Mortimer.

3 VI. (£1).—JOSEPH DRIGHTON, A.F.O., R.S.S., 81 East Parade, Harrogate.

22 E. N. & H. C.—SAM PLANE, R.S.S., 17 Cross Street, Kettlebrook Tamworth.

¹ The Royal Lancashire Society's "Preston Guild Commemoration" Gold Challenge Cup, value Fifty Guineas, given for a student in Lancashire, Cheshire or North Wales obtaining the highest number of marks in the Competitions; and the Royal Lancashire Society's "Lancaster County" Challenge Cup, value Twenty-five Guineas, given for a student resident in the County of Lancaster obtaining the highest number of marks in the Competitions.

² Gold Medal given by the Worshipful Company of Farriers to the First Prize Winner in each Class.

³ Silver and Bronze Medals given by the National Master Farriers' Association, in each Class, for Members of that Association only.

Class 2. *Cart Horses.* [45 competitors.]

- 11 I. (£3 10s., & G. M.)—HARRY HEWITT, R.S.S., Bedford Street Shoeing Forge, Huddersfield.
 33 II. (£3, & S. M.)—ALBERT DENNISON, R.S.S., Mill Lane, Brighouse.
 40 III. (£2 10s., & B. M.)—HARRY JONES, R.S.S., The Forge, The Hendre, Monmouth.
 35 IV. (£2.) C. S. DOUBLM, A.F.O., R.S.S., Holmleigh, Spencer's Wood, Reading.
 50 V. (£1 10s.) WILLIAM MORGAN, Owmper, Llanarthney, Carmarthen.
 20 VI. (£1.) R. S. CORNWELL, R.S.S., Market Street, Milnsbridge, Huddersfield.
 14 R. N. & H. C.—CHARLES MARSHALL, A.F.O., R.S.S., Otley Road Forge, Guiseley, Leeds.

Class 3. *Roadsters.* [45 competitors.]

- 108 I. (£3 10s., & G. M.)—J. C. MORRIS, A.F.O., R.S.S., Henley-in-Arden.
 98 II. (£3, & S. M.)—A. KEMBER, A.F.O., R.S.S., 61 Goods Station Road, Tunbridge Wells.
 90 III. (£2 10s., & B. M.)—GEORGE KERR, R.S.S., 38 Kyle Street, Ayr.
 105 IV. (£2.)—HERBERT MORGAN, A.F.O., R.S.S., Owmper, Llanarthney, Carmarthen.
 93 V. (£1 10s.) HARRY JONES, R.S.S., The Forge, The Hendre, Monmouth.
 79 VI. (£1.) J. W. DOOLEY, R.S.S., High Street, Yeadon, Leeds.
 77 R. N. & H. C. GEORGE DEIGHTON, R.S.S., 81 East Parade, Harrogate.

FARM PRIZE COMPETITIONS.³(Open to *bonâ fide* Tenant Farmers.)

For the best managed Farms in Lancashire and Cheshire.

Class 1. *Farms, chiefly Arable, of 150 acres or over, exclusive of Fell or Tidal Marsh Land.* [5 entries.]

- 3 I. (£100.)—ROBERT SHEPHERD, Parkside, Aston, Preston Brook, Warrington.
 2 II. (£50.)—W. H. CARTER, Moss Hall, Carrington, Manchester.
 1 R. N. & H. C. JOSHUA BALL, Southworth Hall, Warrington.

Class 2. *Farms, chiefly Arable, of not less than 50 and under 150 acres, exclusive of Fell or Tidal Marsh Land.* [10 entries.]

- 6 I. (£50.) JOHN ALMOND, Buckley Hill Farm, Sefton, via Blundellands, Liverpool.
 10 II. (£25.) S. T. ROSEBOTHAM, Stanley Farm, Bicker-taffe, Ormskirk.
 11 R. N. & H. C. EDWIN J. TURTON, Landican, Woodchurch, Birkenhead.

Class 3. *Stock or Dairy Farms of 150 acres or over, exclusive of Fell or Tidal Marsh Land.* [4 entries.]

- 18 I. (£100.)—THOMAS C. GOODWIN, Henhull Hall, Nantwich.
 19 II. (£50.)—SAM S. RAINGILL, The Grange, Ringway, Altrincham.
 17 R. N. & H. C.—WILLIAM COCKSON, Alpraham Hall, Tarporley.

Class 4. *Stock or Dairy Farms of not less than 50 and under 150 acres, exclusive of Fell or Tidal Marsh Land.* [5 entries.]

- 21 I. (£50.)—THE ESTATE OF THE LATE JOHN BLACKSHAW, Blue Coat Farm, Hatton, Warrington.
 22 II. (£25.) THOMAS CROSKELL, Bank House Farm, Glasdon Dock, Lancaster.
 20 R. N. & H. C. THOMAS ABELL, Whitening House Farm, Bradwell, Sandbach.

FORESTRY SECTION.

Class 1. *Specimens of Oak, Elm, Ash, and Beech Timber, grown in Great Britain or Ireland.*

- 1 I. (Silver Medal).—EARL BRAUGHAMP, K.O.M.G., Madresfield Court, Malvern.
 5 II. (Bronze Medal).—T. J. M. MORE, Linley, Bishop's Castle.
 3 R. N. & H. C.—THE EARL OF POWIS, Powis Castle, Welshpool.

Class 2. *Specimens of Larch, Spruce, and Scotch Pine Timber.*

- 10 I. (Silver Medal).—T. J. M. MORE, Linley, Bishop's Castle.
 7 II. (Bronze Medal).—EARL BRAUGHAMP, K.O.M.G., Madresfield Court, Malvern.
 8 R. N. & H. C. THE EARL OF POWIS, Powis Castle, Welshpool.

¹ Gold Medal given by the Worshipful Company of Farriers to the First Prize Winner in each Class.

² Silver and Bronze Medals given by the National Master Farriers' Association, in each Class, for Members of that Association only.

³ Prizes given by the Liverpool Local Committee.

Award of Prizes at Liverpool, 1910.

Class 3.—Specimens of any other sort of Hard Wood or Broad-leaved Timber.

- 11 I. (Silver Medal).—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 12 II. (Bronze Medal).—THE EARL OF DERBY, G.C.V.O., C.B., Knowsley, Prescott.
 14 R. N. & H. C.—O. COLTMAN ROGERS, Stannage Park, Radnorshire.

Class 4.—Specimens of any other sort of Coniferous Timber.

- 15 I. (Silver Medal).—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 16 II. (Bronze Medal).—O. COLTMAN ROGERS, Stannage Park Radnorshire.

Class 5.—Specimens of damage done by Insect Pests injurious to Forest Trees.
 [No Entry.]

Class 6.—Specimens showing comparative quality of any Timber grown on different soils and situations.

- 17 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 7.—Specimens demonstrating the beneficial effects of Pruning.

- 18 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 8.—Specimens of Stems, and Boards cut from them, illustrating the effects of dense and thin crops in branch suppression and quality of the timber.

- 19 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern

Class 9.—Examples of the damage caused by Squirrels, Voles, &c., to various kinds of trees, or of any abnormal growth.

- 20-27 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 10.—Gates for Farm or Estate use, manufactured from Oak Timber.

- 33 I. (Silver Medal).—T. J. M. MORE, Linley, Bishop's Castle.
 30 II. (Bronze Medal).—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 32 R. N. & H. C.—THE EARL OF POWIS, Powis Castle, Welshpool.

Class 11.—Gates for Farm or Estate use, manufactured from any other home-grown wood.

- 38 I. (Silver Medal).—T. J. M. MORE, Linley, Bishop's Castle.
 35 II. (Bronze Medal).—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 37 R. N. & H. C.—SIR MAURICE BROMLEY-WILSON, BT., Dallam Tower, Milnthorpe.

Class 12.—Wickets or Hunting Gates (self-closing), manufactured from home-grown timber.

- 39 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 41 R. N. & H. C.—T. J. M. MORE, Linley, Bishop's Castle.

Class 13.—Specimens of Home-grown Timber, suitable for estate purposes, showing the advantage of applying Creosote or any other preservative.

- 42 Silver Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 14.—Fencing.

- 45 { Equal Silver } ARMSTRONG, ADDISON & CO., Sunderland.
 51 { Medals. } STANLEY UNDERWOOD CO., Lynchmore Farm, Haslemere.

Classes 16 to 22.—Articles not for competition.

- 54 Silver Medal. O. COLTMAN ROGERS, Stannage Park, Radnorshire.
 61 Bronze Medal.—KING HAURE NURSERIES, LTD., Hereford.
 63 Bronze Medal.—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
 75 Bronze Medal.—RAMMER & CO., LTD., Mersey Saw Mills, Liverpool.

Gold Medal or Piece of Plate, for the best Collection of Exhibits in Classes 1-11
 to EARL BEAUCHAMP, K.O.M.G.
 R. N. to T. J. M. MORE.

PLANTATIONS COMPETITION.

Restricted to Lancashire, Cheshire, and North Wales.

Class 23.—Plantations, thinned upon the best system, not less than five acres in extent, under thirty years old, and intended for the production of Hardwoods. [2 entries.]

Poor Soil.

- 2 I. (Silver Medal & £3).—THE EARL OF SEFFRON, Abbeystead, Lancaster.

Rich Soil.

- 1 I. (Silver Medal & £3).—THE EARL OF DERBY, G.C.V.O., C.B., Knowsley, Prescott.

Class 24. *Unthinned Plantations, not less than five acres in extent, between six and thirty years old, and intended for the production of Hardwoods.*
[No entry.]

Class 25. *Plantations, thinned upon the best system, not less than five acres in extent, under thirty years old, and intended mainly for the production of Conifers.* [2 entries.]

Poor Soil.

3 I. (Silver Medal & £3, & Gold Medal.)—COLONEL SANDBACH, Huddon, Abergole.

4 II. (Bronze Medal & £2.)—COLONEL SANDBACH.

Class 26. *Unthinned Plantations, not less than five acres in extent, between six and thirty years old, and intended mainly for the production of Conifers.* [6 entries.]

Poor Soil.

5 I. (Silver Medal & £3.)—THE EARL OF POWIS, Powis Castle, Welshpool.

Rich Soil.

6 I. (Silver Medal & £3,) & 10 (Bronze Medal & £2.)—ALFRED SAUNDERS, Linnere, Delamere Forest, Northwich.

HOME NURSERIES.

Class 27. *Best Beds or Drills of Seedlings sown in the spring of 1910. Conifers: Larch, Scots Fir, Corsican Fir, Austrian Fir, Douglas Spruce, or any other variety.* [3 entries.]

12 I. (Silver Medal & £3.)—LIVERPOOL CORPORATION, Lake Vyrnwy.

11 II. (Bronze Medal & £2.)—LIVERPOOL CORPORATION, Rivington.

Class 28. *Hardwoods: Oak, Beech, Ash, Sycamore, Elm, Birch, Alder, or other species.* [2 entries.]

15 I. (Silver Medal & £3.)—LIVERPOOL CORPORATION, Lake Vyrnwy.

14 II. (Bronze Medal & £2.)—LIVERPOOL CORPORATION, Rivington.

Class 29. *Best Beds or Drills of two year seedlings—Conifers; as Class 27.*

16 I. (Silver Medal & £3.)—LIVERPOOL CORPORATION, Rivington.

17 II. (Bronze Medal & £2.)—LIVERPOOL CORPORATION, Lake Vyrnwy.

Class 30. *Hardwoods (as Class 28), two year seedlings.*

19 I. (Silver Medal & £3.)—LIVERPOOL CORPORATION, Rivington.

20 II. (Bronze Medal & £2.)—LIVERPOOL CORPORATION, Lake Vyrnwy.

HORTICULTURAL EXHIBITION.

Class 1. *Groups of Miscellaneous Plants, in and out of bloom.* [4 entries.]

1 I. (£30.)—JAMES GYPIER & SONS, Exotic Nurseries, Cheltenham.

2 II. (£25.)—W. A. HOLMES, West End Nurseries, Cheltonfield.

3 { Equal Third } JOE H. MILAR, Valley Nurseries, Bankfoot, Almondbury.

4 { Prize of £20. } WILLIAM VAUGH, Leamington.

Class 2. *Groups of Miscellaneous Plants in and out of bloom, open to amateurs only.*

[No entry.]

Class 3. *Collections of Orchids arranged for effect.* [1 entry.]

5 I. (Gold Medal.)—JAMES GYPIER & SONS, Exotic Nurseries, Cheltenham.

Class 4. *Groups of Carnations in pots.* [8 entries.]

6 I. (Gold Medal & £5.)—THE EARL OF DERBY, G.U.V.O., C.B., Knowsley, Prescot.

8 II. (£2.)—MRS. R. YOUNG, West Derby, Liverpool.

7 III. (£2.)—CHARLES ALCOCK, Ingie Lodge, Blundellsands, Liverpool.

Class 5. *Collections of Cut Sprays of Carnations.* [8 entries.]

11 I. (Gold Medal & £5.)—A. F. DUTTON, Iwer, Bucks.

10 II. (£2.)—C. F. WATERS, Balcombe, Sussex.

9 III. (£2.)—O. ENGELMANN, Saffron Walden.

Class 6. *Groups of Tuberous Begonias in pots.* [1 entry.]

12 I. (Gold Medal & £5.)—BLACKMORE & LANGDON, Twerton, Bath.

1 { Gold Medal given by the Royal English Arboricultural Society for the best
Plantation in Classes 23-26.

Class 7.—Displays of Hardy Cut Flowers and Plants [3 entries]

- 15 I. (Gold Medal & £10.)—JAMES SAUL, South Meadow Lane Nurseries, Preston.
 16 II. (£5.)—CALDWELL & SONS, Knutsford.
 17 III. (£3.)—G. GIBSON & CO, Leeming Bar, Bedale.

Class 8.—Collections of Cut Hardy Perennials, Roses excepted [2 entries.]

- 18 I. (Gold Medal & £5.) HARKNESS & CO., Leeming Bar, Bedale
 19 II. (£3.)—G. GIBSON & CO, Leeming Bar, Bedale

Class 9.—Collections of Cut Roses. [5 entries.]

- 21 I. (Gold Medal & £5.)—G. MOUNT & SONS, LTD, Canterbury
 22 II. (£3.) GEORGE PRINCE, Longworth, Berks
 23 III. (£2.)—W E & J BROWN, Peterborough.
 24 IV. (£1.)—E. J. HICKS, Twyford, Berks.

Class 10.—Collections of Stove and Greenhouse Plants in bloom. [1 entry]

- 25 I. (Gold Medal & £10.)—JAMES CYPHER & SONS, Exotic Nurseries, Cheltenham

Class 11.—Collections of Sweet Peas. [10 entries.]

- 26A I. (Gold Medal & £5.)—MRS HEMUS, Holdfast Hall, Upton-on-Severn
 27 II. (£3.)—E. W. KING & CO, Coggeshall, Essex
 28 III. (£2.)—CHAS. W. BREADMORE, High Street, Winchester.

Class 12.—Collections of Eight Kinds of Vegetables. [2 entries.]

- 29 I. (Gold Medal & £5.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop

Class 13.—Collections of Eight Kinds of Fruit. [3 entries.]

- 30 I. (Gold Medal & £5.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop
 31 II. (£3.)—THE EARL OF HARRINGTON, Alington Castle, Derby
 32 III. (£2.)—THE EARL OF DORSET, G.C.V.O., O.B., Knowsley, Prescott

Horticultural Exhibits not for Competition.

Gold Medals to :—

- 43 A. DICKSON & SONS, Royal Nurseries, Newtownards, Co. Down.
 44 DICKSON, BROWN & TAIT, 45 Corporation Street, Manchester.
 45 THE HON. VICARY GIBBS, Aldenham House, Epsie
 46 R. P. KER & SONS, Bannet Street, Liverpool
 47 KING'S ACRE NURSERIES, LTD., Hereford.
 48 STUART LOW & CO., Royal Nurseries, Bush Hill Park, Enfield.
 49 R. WALLACE & CO, Colchester.
 50 JOHN WATERER & SONS, The Nurseries, Bagshot.

Silver Gilt Medals to :—

- 51 R. H. BATH, LTD., The Floral Farms, Wisbech.
 52 BEES LTD., 175 Mill Street, Liverpool.
 53 DICKSON & ROBINSON, Cathedral Street, Manchester.
 54 DOBBIE & CO, Seedsmen, Edinburgh.

Silver Medals to :—

- 55 BARR & SON, King Street, Covent Garden, London, W.C.
 56 W. E. & J. BROWN, Peterborough
 57 DICKSONS, LTD., Chester.
 58 GODFREY & SONS, Exmouth, Devon.
 59 MISS HEMUS, Holdfast Hall, Upton-on-Severn.
 60 WILLIAM J. UNWIN, Histon, Cambridge

IMPLEMENTS.

Trials of Agricultural Motors. [11 entries, 1 absent]

- Gold Medal.—J. & H. McLAREN, Midland Engine Works, Leeds, for Improved 5-ton Compound Agricultural Motor or Tractor

Miscellaneous Implements.

Silver Medal for articles entered as "New Implements" for Agricultural or Estate Purposes.

- 407 ROBERT BOBY, LTD., St. Andrew's Works, Bury St. Edmunds, for Cylinder "Mobus" Patent for Cattle, Barley, Oats, &c
 484 J. V. COLLYER, Forest Implement Works, Desford Leicester, for Chaff Cutter "The Phoenix."
 1325 THOMAS BRADFORD & CO., Crescent Iron Works, Salford, Manchester, for Single-handle Ltd Fastener for Churn.
 1517 DAIRY SUPPLY CO, LTD., Museum Street, London, W.C., for Cream Separator "Alfa Laval"

PRIZE LIST

For NORWICH SHOW, JUNE 26 to 30, 1911.

Total value of Prizes offered (inclusive of Champion Prizes, Special Prizes, Cups, Medals, and Glass Prizes), 10,800/., of which amount 2,075/., are contributions from the Norwich Local Committee, 2,430/., from various Breed Societies, and 652/., from other sources.

CHAMPION PRIZES.

The following Champion Prizes are offered by Breed Societies and others:—

HORSES.

SHIRE HORSE SOCIETY:—Two Gold Medals, value 10/., each (or 10/., in money), for the best Shire Stallion, and for the best Mare or Filly, and 5/., each to the Breeders of the Champion Shire Stallion, and Mare or Filly.

CLYDESDALE HORSE SOCIETY:—Two Prizes of 10/., each for the best Clydesdale Stallion, and for the best Mare or Filly.

SUFFOLK HORSE SOCIETY:—Challenge Cup, value 50/., for the best Suffolk Stallion.

HUNTERS' IMPROVEMENT SOCIETY: Two Gold Medals for the best Hunter Mare 4 years and upwards, and for the best Filly not exceeding 3 years old.

HUNTERS:—A Silver Cup, value 30/., for the best Hunter Brood Mare.

A Gold Challenge Cup, value 52/., 10s., for the best Hunter Mare or Gelding in the Riding Classes.

POLO AND RIDING PONY SOCIETY:—Two Gold Medals for the best Polo and Riding Pony Stallion or Colt, and for the best Mare or Filly.

HACK AND RIDING PONIES:—A Gold Challenge Cup, value 52/., 10s., for the best Hack or Riding Pony.

HACKNEY HORSE SOCIETY:—Two Gold Medals, value 10/., each (or 10/., in money), for the best Hackney Stallion, and for the best Mare or Filly.

HACKNEY HORSE SOCIETY:—Gold Medal (or 5/., in money) for the best Mare or Gelding in the Single Driving Classes.

HARNESS CLASSES:—A Gold Challenge Cup, value 52/., 10s., for the best Single Harness Mare or Gelding in novice classes.

A Gold Challenge Cup, value 52/., 10s., for the best Single Harness Mare or Gelding.

HARNESS CLASSES:—Two Gold Challenge Cups, value 50 guineas each, (1.) for the best Pair, (2.) for the best Tandem.

FOUR-IN-HANDS:—A Gold Challenge Cup, value 52/., 10s., for the best Team.

SHETLAND PONY STUD BOOK SOCIETY:—Silver Medal for the best Shetland Pony.

WELSH PONY AND COB SOCIETY:—Two Silver Medals and Certificates for the best Welsh Pony Stallion, and for the best Mare.

CATTLE.

SHORTHORN SOCIETY:—Two Prizes of 20/., each for the best Shorthorn Bull, and for the best Cow or Heifer.

DAIRY SHORTHORN (COATES'S HERD BOOK) ASSOCIATION:—Prize of 10/., for the best Pedigree Shorthorn Dairy Cow or Heifer; and a Challenge Cup, value 52/., 10s., for the best Pedigree Dairy Shorthorn Group of one Bull and two Cows or Heifers.

LINCOLNSHIRE RED SHORTHORN ASSOCIATION:—Two Prizes of 10/., each for the best Shorthorn Bull and for the best Cow or Heifer.

HEREFORD HERD BOOK SOCIETY:—Two Prizes of 10/., 10s. each for the best Hereford Bull, and for the best Cow or Heifer.

DEVON CATTLE BREEDERS SOCIETY Two Prizes of 10/ 10s each for the best Devon Bull and for the best Cow or Heifer

SOUTH DEVONS—A Challenge Cup value 10/ for the best South Devon animal

LONGHORNS—A Challenge Cup value 1/ for the best longhorn animal

SUSSEX HERD BOOK SOCIETY Two Silver Medals in the best Sussex Bull and for the best Cow or Heifer

RID POLL SOCIETY Two Prizes of 7/ each for the best Red Poll Bull and for the best Cow or Heifer

ABERDEEN ANGUS CATTLE SOCIETY A Gold Medal for the best animal of the Aberdeen Angus breed

ENGLISH ABERDEEN ANGUS CATTLE ASSOCIATION A Gold Medal for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society

ENGLISH JERSEY CATTLE SOCIETY—Two Prizes of 10/ each for the best Jersey Bull and for the best Cow or Heifer

ROYAL JERSEY AGRICULTURAL SOCIETY A Prize of 10/ 10s for the best Jersey Bull

ENGLISH KERRY AND DLYER CATTLE SOCIETY—Two Challenge Cups value 26/ 5s each for the best Kerry Bull Cow or Heifer and for the best Dexter Bull Cow or Heifer

ENGLISH JERSEY CATTLE SOCIETY—Gold Medal (or 10/ in money) Silver Medal and Bronze Medal for the three best Jersey Animals in the Butter test Classes

SHEEP.

SOUTHDOWN SHEEP SOCIETY—A Gold Medal (or 10/ 10s in money) for the best Southdown Ram and Silver Medal (or 1/ in money) for the best Pen of 1 wethers or Ewe Lambs

HAMPSHIRE DOWN SHEEP BREEDERS ASSOCIATION—Prize of 10/ for the best Hampshire Down Ram Lamb Pen of Ram Lambs or Ewe Lambs

SUFFOLK SHEEP SOCIETY Two Prizes of 10/ each for the best Suffolk Ram and for the best Pen of Flocks of 1 wethers

DORSET HORN SHEEP BREEDERS ASSOCIATION—A Prize of 5/ for the best Dorset Horn Ram Pen of Lambs or Ewes

LINCOLN LONG WOOL SHEEP BREEDERS ASSOCIATION A Piece of Plate value 5/ for the best Lincoln Ram a Challenge Cup value 7/ 10s for the best Group of one Lincoln Ram and three Ewes

SOCIETY OF BORDER LIOTHIAN SHEEP BREEDERS A Challenge Cup value 50/ for the best Border Leicester Sheep

KENT OR ROMNEY MARSH SHEEP BREEDERS ASSOCIATION Prize of 10/ 10s for the best Kent or Romney Marsh Ram

PIGS.

NATIONAL PIG BREEDERS ASSOCIATION Three Gold Medals (or 5/ 5s in money) for the best Large White Boar or Sow Middle White Boar or Sow and Lam White Boar or Sow

Berkshire Pig Society—Prize of 5/ 5s for the best Berkshire Boar or Sow

LARGE BLACK PIG SOCIETY—Prize of 10/ for the best Large Black Boar, and a Challenge Cup value twenty guineas for the best Large Black Sow

LINCOLNSHIRE CURLED COATED PIG BREEDERS ASSOCIATION Two Prizes of 5/ 5s each for the best Lincolnshire Curled Coated Boar and the best Sow

HORSES (£3,532).

SHIRE.	Prizes		
	1st	2nd	3rd
STALLION, foaled in 1910 ¹ . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
STALLION, foaled in 1908 . . .	20	10	5
FILLY, foaled in 1910 ¹ . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1908 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
COLT FOAL, produce of mare in above class . . .	10	5	3
FILLY FOAL, produce of mare in above class . . .	10	5	3

CLYDESDALE.²

STALLION, foaled in 1910 . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
STALLION, foaled in 1908 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1908 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
FOAL, produce of mare in above class . . .	10	5	3

SUFFOLK.³

STALLION, foaled in 1910 . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
STALLION, foaled in 1908 . . .	20	10	5
STALLION, foaled in or before 1907 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1908 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
FOAL, produce of mare in above class . . .	10	5	3

DRAUGHT HORSES.⁴

IN HAND.

GELDING, foaled in 1907 or 1908 . . .	20	10	5
---------------------------------------	----	----	---

HUNTERS.⁵

BREEDING CLASSES.

COLT OR GELDING, foaled in 1910 . . .	20	10	5
GELDING, foaled in 1909 . . .	20	10	5
GELDING, foaled in 1908 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1908 . . .	20	10	5
MARE (with foal at foot), up to from 12 to 14 st. . .	20	10	5
MARE (with foal at foot), up to more than 14 st. . .	20	10	5
COLT FOAL, produce of Mare in above classes . . .	10	5	3
FILLY FOAL, produce of Mare in above classes . . .	10	5	3

HUNTERS continued

RIDING CLASSES.⁴

	Prizes				
	1st	2nd	3rd	4th	5th
MARE OR GELDING, foaled in 1907, up to from 12 to 14 st. . .	15	10	5	5	5
MARE OR GELDING, foaled in 1907, up to more than 14 st. . .	15	10	5	5	5
MARE OR GELDING (Novice) foaled in or before 1906, up to from 12 to 14 st. . .	15	10	5	5	5
MARE OR GELDING (Novice), foaled in or before 1906, up to more than 14 st. . .	15	10	5	5	5
MARE OR GELDING, foaled in or before 1907, up to from 12 to 13.7 st. . .	20	15	10	5	5
MARE OR GELDING, foaled in or before 1907, up to more than 13.7 and not over 15 st. . .	20	15	10	5	5
MARE OR GELDING foaled in or before 1907, up to more than 15 st. . .	20	15	10	5	5

POLO AND RIDING PONIES.⁶

BREEDING CLASSES.

STALLION, foaled in or before 1908, not over 14.2 h. . .	15	10	5
COLT, FILLY, OR GELDING, foaled in 1910 . . .	15	10	5
COLT, FILLY, OR GELDING, foaled in 1909 . . .	15	10	5
FILLY OR GELDING, foaled in 1908 . . .	15	10	5
MARE (with foal at foot), not over 14.2 h. . .	15	10	5

HACK AND RIDING PONY CLASSES.⁴

MARE OR GELDING, Hunter or Polo Type (light-weight), foaled in or before 1907, not exceeding 15 h. . .	15	10	5
MARE OR GELDING, Hunter or Polo Type (heavy-weight), foaled in or before 1907, not exceeding 15 h. . .	15	10	5
MARE OR GELDING, Park Hack (light-weight), foaled in or before 1907, exceeding 15 h. . .	15	10	5
MARE OR GELDING, Park Hack (heavy-weight), foaled in or before 1907, exceeding 15 h. . .	15	10	5

CLEVELAND BAY OR COACH HORSE.

STALLION, foaled in 1908 or 1909 . . .	15	10	5
MARE (with foal at foot) . . .	15	10	5

¹ Offered by the Shire Horse Society.

² £50 provided by the Clydesdale Horse Society.

³ £50 provided by the Suffolk Horse Society; £45 provided by the Norwich Local Committee.

⁴ Provided by the Norwich Local Committee.

⁵ £100 provided by a member of the R.A.S.E. interested in the breed.

⁶ £40 provided by the Polo and Riding Pony Society.

HACKNEYS. ¹	Prizes			
	1st	2nd	3rd	4th
BREEDING CLASSES.				
STALLION, foaled in 1910 . . .	20	10	5	
STALLION, foaled in 1909 . . .	20	10	5	
STALLION, foaled in 1908 . . .	20	10	5	
FILLY, foaled in 1910 . . .	20	10	5	
FILLY, foaled in 1909 . . .	20	10	5	
FILLY, foaled in 1908 . . .	20	10	5	
MARE (with foal at foot), over 14 and not over 15 2 h. . .	20	10	5	
MARE (with foal at foot), over 15 2 h. . .	20	10	5	
FOAL, produce of Mare in above classes . . .	10	5	3	

HACKNEY PONY.				
BREEDING CLASSES.				
STALLION, foaled in or before 1907, not over 14 h. . .	15	10	5	
COLT, FILLY, OR GELDING, foaled in 1909, not over 13 2 h. . .	15	10	5	
FILLY OR GELDING, foaled in 1908, not over 13 2 h. . .	15	10	5	
MARE (with foal at foot), not over 14 h. . .	15	10	5	

DRIVING CLASSES. ²	Prizes			
	1st	2nd	3rd	4th
To be driven in Single Harness.				
MARE OR GELDING (Novice), not over 14 h. . .	15	10	5	5
MARE OR GELDING (Novice), over 14 and not over 15 h. . .	15	10	5	5
MARE OR GELDING (Novice), over 15 h. . .	15	10	5	5
MARE OR GELDING, not over 14 h. . .	15	10	5	5
MARE OR GELDING, over 14 and not over 15 h. . .	15	10	5	5
MARE OR GELDING, over 15 and not over 15 2 h. . .	15	10	5	5
MARE OR GELDING, over 15 2 h. . .	15	10	5	5

To be driven in Double Harness.				
MARES OR GELDINGS, not over 15 h. . .	15	10	5	5
MARES OR GELDINGS, over 15 h. . .	15	10	5	5

To be driven Tandem.				
MARES OR GELDINGS, not over 15 h. . .	15	10	5	5
MARES OR GELDINGS, over 15 h. . .	15	10	5	5

Four-in-hand Teams.				
MARES OR GELDINGS, to be shown before a Coach . . .	20	15	10	5

SHETLAND PONY.	Prizes			
	1st	2nd	3rd	4th
STALLION, foaled in or before 1908, not over 10 1/2 h. . .	10	5	3	
MARE (with foal at foot), not over 10 1/2 h. . .	10	5	3	

WELSH PONY. ³	Prizes			
	1st	2nd	3rd	4th
(Mountain or Moorland Class)				
STALLION, foaled in or before 1908, not over 12 h. . .	10	5	3	
MARE (with foal at foot), not over 12 h. . .	10	5	3	
MARE OR GELDING (to be ridden) not exceeding 13 2 h. (Geldings must have been eligible for the Welsh Stud Book from date of birth) . . .	10	5	3	

JUMPING COMPETITIONS. ⁴	Prizes				
	1st	2nd	3rd	4th	5th
A MARE OR GELDING	25	10	5	5	5
B MARE OR GELDING (First Prize Winners in Class A not eligible) . . .	20	10	5	5	5
C MARE OR GELDING (First Prize Winners in Classes A and B not eligible) . . .	15	10	5	5	5
D CHAMPION CLASS, Mare or Gelding . . .	25	15	10	5	5

CATTLE (£2,726).

SHORTHORN.	Prizes			
	1st	2nd	3rd	4th
BULL, calved in 1906, 1907, or 1908	10	6	4	
BULL, calved on or between Jan. 1, 1909, and March 31, 1909	10	6	4	
BULL, calved on or between April 1, 1909, and Dec. 31, 1909	10	6	4	
BULL, calved on or between Jan. 1, 1910, and March 31, 1910	10	6	4	
BULL, calved on or between April 1, 1910, and Dec. 31, 1910	10	6	4	
SPECIAL PRIZE of 10/- for the best Bull calved in 1910, the property of an Exhibitor residing in Norfolk or Suffolk				
GROUP CLASS, for the best collection of either three or four Bulls, bred by Exhibitor	15	10		
COW, in milk, calved in or before 1907	10	6	4	
HEIFER, in-milk, calved in 1908	10	6	4	
HEIFER, calved on or between Jan. 1, 1909, and March 31, 1909	10	6	4	
HEIFER, calved on or between April 1, 1909, and Dec. 31, 1909	10	6	4	
HEIFER, calved on or between Jan. 1, 1910, and March 31, 1910	10	6	4	
HEIFER, calved on or between April 1, 1910, and Dec. 31, 1910	10	6	4	
GROUP CLASS, for the best collection of either three or four Cows or Heifers, bred by Exhibitor	15	10		
BULL, calved in 1910	10	6	4	
DAIRY COW, in milk, calved in or before 1908	10	6	4	
DAIRY COW, in milk, calved in 1907	10	6	4	
DAIRY HEIFER, in-milk, calved in or after 1908	10	6	4	
Milk Yield Prizes . . .	10	6	4	

¹ £75 provided by the Hackney Horse Society.

² Provided by the Norwich Local Committee.

³ £18 provided through the Welsh Pony and Cob Society.

⁴ Offered by the Shorthorn Society.

⁵ Offered by the Dairy Shorthorn (Coates's Herd Book) Association.

Prize List for Norwich Show, 1911.

cxxvii

LINCOLNSHIRE RED SHORTHORN.¹

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, or 1908	10	6	4
BULL, calved in 1909	10	6	4
BULL, calved in 1910	10	6	4
COW, in-milk, calved in or before 1907	10	6	4
HEIFER, in-milk, calved in 1908	10	6	4
HEIFER, calved in 1908	10	6	4
HEIFER, calved in 1910	10	6	4
Milk Yield Prizes	10	6	4

HEREFORD.²

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, or 1908	10	6	4
BULL, calved in 1909	10	6	4
BULL, calved in Jan. or Feb., 1910	10	6	4
BULL, calved on or after March 1, 1910	10	6	4
COW, in-milk, calved in or before 1907	10	6	4
HEIFER, in-milk, calved in 1908	10	6	4
HEIFER, calved in 1908	10	6	4
HEIFER, calved in 1910	10	6	4

DEVON.³

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, or 1908	10	6	4
BULL, calved in 1909	10	6	4
BULL, calved in 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before 1908	10	6	4
HEIFER, calved in 1908	10	6	4
HEIFER, calved in 1910	10	6	4
DAIRY COW, in-milk, calved in or before 1908	10	6	4
Milk Yield Prizes	10	6	4

SOUTH DEVON.⁴

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, 1908, or 1909	10	6	-
BULL, calved in 1910	10	6	-
COW OR HEIFER, in-milk, calved in or before 1908	10	6	-
HEIFER, calved in 1908	10	6	-
HEIFER, calved in 1910	10	6	-
Milk Yield Prizes	10	6	4

LONGHORN.⁵

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, 1908, or 1909	10	6	4
BULL, calved in 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before 1908	10	6	4
HEIFER, calved in 1908 or 1910	10	6	4
Milk Yield Prizes	10	6	4

SUSSEX.⁶

	Prizes		
	1st	2nd	3rd
BULL, calved in 1908, 1907, 1908, or 1909	15	6	4
BULL, calved in 1910	15	6	4
COW OR HEIFER, in-milk, calved in or before 1908	15	6	4
HEIFER, calved in 1908	15	6	4
HEIFER, calved in 1910	15	6	4

WELSH.⁷

	Prizes		
	1st	2nd	3rd
BULL, calved on or after Dec. 1, 1903, and before Dec. 1, 1908	10	6	-
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1910	10	6	-
COW OR HEIFER, in-milk, calved before Dec. 1, 1908	10	6	-
HEIFER, calved on or after Dec. 1, 1908, and before Dec. 1, 1910	10	6	-

RED POLL.⁸

	Prizes			
	1st	2nd	3rd	4th
BULL, calved in 1908, 1907, or 1908	10	6	4	3
BULL, calved in 1909	10	6	4	3
BULL, calved in 1910	10	6	4	3
COW OR HEIFER, in-milk, calved in or before 1907	10	6	4	3
HEIFER, in-milk, calved in 1908	10	6	4	3
HEIFER, calved in 1909	10	6	4	3
HEIFER, calved in 1910	10	6	4	3
Milk Yield Prizes	10	6	4	-

ABERDEEN ANGUS.⁹

	Prizes		
	1st	2nd	3rd
BULL, calved on or after Dec. 1, 1905, and before Dec. 1, 1908	10	6	4
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1909	10	6	4
BULL, calved on or after Dec. 1, 1909, and before Dec. 1, 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before Dec. 1, 1908	10	6	4
HEIFER, calved on or after Dec. 1, 1908, and before Dec. 1, 1909	10	6	4
HEIFER, calved on or after Dec. 1, 1909, and before Dec. 1, 1910	10	6	4

GALLOWAY.¹⁰

	Prizes		
	1st	2nd	3rd
BULL, calved on or after Dec. 1, 1905, and before Dec. 1, 1908	10	6	4
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1910	10	6	4
COW OR HEIFER, in-milk, calved before Dec. 1, 1908	10	6	4
HEIFER, calved on or after Dec. 1, 1908, and before Dec. 1, 1910	10	6	4

HIGHLAND.

BULL, calved in or before 1910	10	-	-
COW OR HEIFER, in-milk	10	-	-

AYRSHIRE.¹¹

	Prizes		
	1st	2nd	3rd
BULL, calved in or before 1910	10	6	4
COW OR HEIFER, in-milk	10	6	4
COW OR HEIFER, in-calf	10	6	4
Milk Yield Prizes	10	6	4

- ¹ £80 provided by the Lincolnshire Red Shorthorn Association.
- ² £50 provided by the Hereford Herd Book Society.
- ³ £50 provided by the Devon Cattle Breeders' Society.
- ⁴ £30 provided by the South Devon Herd Book Society.
- ⁵ £20 provided by the Longhorn Cattle Society.
- ⁶ £25 provided by the Sussex Herd Book Society.
- ⁷ £10 lvs. provided by the Welsh Black Cattle Society.
- ⁸ £40 provided by the Red Poll Society; £21 provided by the Norwich Local Committee.
- ⁹ £25 provided by the Aberdeen Angus Cattle Society; £5 provided by the Norwich Local Committee.
- ¹⁰ £15 provided by the Galloway Cattle Society.
- ¹¹ £20 provided by the Ayrshire Cattle Herd Book Society.

	Prizes		
	1st	2nd	3rd
BRITISH HOLSTEIN. ¹	£	£	£
BULL, calved in 1908 or 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before 1908	10	6	4
HEIFER, calved in 1909 or 1910	10	6	4
Milk Yield Prizes	10	6	4

JERSEY. ²			
BULL, calved 1908, 1907, or 1908	10	6	4
BULL, calved in 1909	10	6	4
BULL, calved in 1910	10	6	4
COW, in-milk, calved in or before 1907	10	6	4
HEIFER, in-milk, calved in 1908	10	6	4
HEIFER, in-milk, calved in 1909	10	6	4
HEIFER, calved in 1910	10	6	4
COW OR HEIFER, in-milk, bred by Exhibitor, sired in Great Britain or Ireland	10	6	4
Milk Yield Prizes	10	6	4

GUERNSEY.³
Same as for South Devon.

KERRY. ⁴			
BULL, calved in 1906, 1907, 1908, or 1909	10	6	4
COW, in-milk, calved in or before 1907	10	6	4
HEIFER, in-milk, calved in 1908	10	6	4
HEIFER, calved in 1909 or 1910	10	6	4
Milk Yield Prizes	10	6	4

DEXTER.⁴
Same as for Kerry's.

DAIRY CATTLE. ⁵ (Any Age, Breed, or Cross.)			
DAIRY COW, in-milk, calved in or before 1907	10	6	4
DAIRY COW, in-milk, calved in 1908	10	6	4
Milk Yield Prizes	10	6	4

BUTTER TESTS. ⁶			
COW, of any age, breed, or cross, exceeding 900 lb. live weight	15	10	5
COW, of any age, breed, or cross, not exceeding 900 lb. live weight	15	10	5

SHEEP (£1,930 10s.).

OXFORD DOWN.			
SHEARLING RAM	10	5	3
RAM LAMB	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SHROPSHIRE. ⁷			
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SOUTHDOWN.			
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

HAMPSHIRE DOWN.			
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SUFFOLK. ¹¹			
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3
THREE YEARLING EWES, shown in their wool	10	5	3

DORSET DOWN. ¹²			
SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

DORSET HORN. ¹³			
SHEARLING RAM, dropped after Nov. 1, 1910	10	5	3
THREE RAM LAMBS, dropped after Nov. 1, 1910	10	5	3
THREE SHEARLING EWES, dropped after Nov. 1, 1910	10	5	3
THREE EWE LAMBS, dropped after Nov. 1, 1910	10	5	3

RYELAND. ¹⁴			
RAM, TWO SHEAR and up wards	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING EWES	10	5	3

- ¹ £30 provided by the British Holstein Cattle Society.
- ² £30 provided by the English Jersey Cattle Society.
- ³ £10 provided by the English Guernsey Cattle Society.
- ⁴ £30 provided by the English Kerry and Dexter Cattle Society.
- ⁵ Offered by the Norwich Local Committee.
- ⁶ Offered by the English Jersey Cattle Society.
- ⁷ Offered by the Oxford Down Sheep Breeders' Association.
- ⁸ £45 provided by the Shropshire Sheep Breeders' Association.
- ⁹ Offered by the Southdown Sheep Society.
- ¹⁰ Offered by the Hampshire Down Sheep Breeders' Association.
- ¹¹ £38 provided by the Suffolk Sheep Society; £21 provided by the Norwich Local Committee.
- ¹² £25 provided by the Dorset Down Sheep Breeders' Association.
- ¹³ £18 provided by the Dorset Horn Sheep Breeders' Association.
- ¹⁴ £18 provided by the Ryeland Flock Book Society.

	Prizes		
	1st	2nd	3rd
KERRY HILL (WALES).	10	5	3
RAM, SHEARLING and upwards	10	5	3
THREE SHEARLING EWES	10	5	3

LINCOLN.¹

TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3
THREE YEARLING EWES, shown in their wool	10	5	3

LEICESTER.²

Same as for Dorset Downs.

BORDER LEICESTER.³

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
SHEARLING EWE	10	5	3

WENSLEYDALE.⁴

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3

LONK.⁵

RAM, SHEARLING and upwards	10	5	3
THREE SHEARLING EWES	10	5	3

DERBYSHIRE GRITSTONE.⁶

Same as for Ryelands.

KENT OR ROMNEY MARSH.⁷

TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

COTSWOLD.⁸

SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

DEVON LONG-WOOL.⁹

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING EWES	10	5	3

- ¹ £80 provided by the Lincoln Long-Wool Sheep Breeders' Association.
- ² £15 provided by the Leicester Sheep Breeders' Association.
- ³ £15 provided by the Society of Border Leicester Sheep Breeders.
- ⁴ £15 provided by the Wensleydale Blue-faced Sheep Breeders' Association.
- ⁵ £10 provided by the Wensleydale Long-Wool Sheep Breeders' Association.
- ⁶ £10 provided by the Lonk Sheep Breeders' Association.
- ⁷ £18 provided by the Derbyshire Gritstone Sheep Breeders' Society.
- ⁸ £48 provided by the Kent or Romney Marsh Sheep Breeders' Association.
- ⁹ £25 provided by the Cotswold Sheep Society.
- ¹⁰ £15 provided by the Devon Long-Wooled Sheep Breeders' Society.
- ¹¹ £30 provided by the South Devon Flock Book Association.
- ¹² £18 provided by the Dartmoor Sheep Breeders' Association.
- ¹³ £18 provided by the Exmoor Horn Sheep Breeders' Society.
- ¹⁴ £15 provided by Breeders of Cheviot Sheep.
- ¹⁵ £10 10s provided by the Welsh Mountain Flock Book Society.
- ¹⁶ £15 provided by Breeders of Black-faced Mountain Sheep.
- ¹⁷ £24 provided by the National Pig Breeders' Association.
- ¹⁸ £18 provided by the British Berkshire Society.
- ¹⁹ £18 provided by the Large Black Pig Society.
- ²⁰ £18 provided by the Lincolnshire Curly-Coated Pig Breeders' Association.

	Prizes		
	1st	2nd	3rd
SOUTH DEVON. ¹⁰	10	5	3
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

DARTMOOR.¹¹

Same as for Ryelands.

EXMOOR.¹²

Same as for Ryelands.

CHEVIOT.¹³

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
SHEARLING EWE	10	5	3

HERDWICK.

Same as for Kerry Hill.

WELSH MOUNTAIN.¹⁴

Same as for Lonk.

BLACK-FACED MOUNTAIN.¹⁵

Same as for Cheviot.

PIGS (£710 10s.).

Large White ¹⁶	10	5	3
Middle White ¹⁷	10	5	3
Tamworth ¹⁸	10	5	3
Berkshire ¹⁹	10	5	3
Large Black ²⁰	10	5	3
Lincolnshire Curly-Coated ²¹	10	5	3

For Prices see below

In each of the above Breeds the following prizes will be given:—

	1st	2nd	3rd
BOAR, farrowed in 1907, 1908, or 1909	10	5	3
BOAR, farrowed in 1910	10	5	3
BOAR, farrowed in 1911	10	5	3
BREEDING SOW, farrowed in 1907, 1908, or 1909	10	5	3
SOW, farrowed in 1910	10	5	3
THREE SOW PIGS, farrowed in 1911	10	5	3

POULTRY (£402).

Prizes of 30s., 20s., and 10s. are offered in each class for the best COCK, HEN, COCKEREL, and PULLET of the following Breeds:—

- Game, Old English.
- Game, Indian.
- Game, Modern.
- Game, Black Sumatra.

TWO SILVER MEDALS: (1) for best Black Sumatra Cock or Cockerel, (2) for best Hen or Pullet.

- Langshan.
- Plymouth Rock, Barred.
- Plymouth Rock, any other colour.
- Wyandotte, Gold or Silver Laced.
- Wyandotte, White.
- Wyandotte, Black.
- Wyandotte, Partridge.
- Wyandotte, Columbian.
- Wyandotte, Blue.
- Wyandotte, any other variety
- Orpington, Buff.
- Orpington, White.
- Orpington, Black.
- Orpington, Spangled
- Orpington, any other colour.
- Minorca.
- Leghorn, White.
- Leghorn, Brown.
- Leghorn, Black.
- Leghorn, any other colour.
- Dorking, Silver Grey.
- Dorking, coloured.
- Sussex, Red.
- Sussex, Light.
- Sussex, Speckled.

THREE SERVETTE RINGS: (1) for best Red, (2) for best Light, (3) for best Speckled Sussex.

- Ancona.
- Yokohama, White.
- Yokohama, Duckwing or Brangle.
- Yokohama, any other colour.
- Brahma.
- Cochin.
- Maline.

TWO SILVER MEDALS: (1) for best Cockerel de Maline, (2) for any other variety of Maline.

Campine.

SILVER MEDAL for best Campine 4

- Faverolle.
- Houdan.
- Any other Breed.
- Bantams, Old English Game.
- Bantams, Modern Game
- Bantams, Hebridean.
- Bantams, Wyandotte
- Bantams, Yokohama.
- Bantams, any other variety.

DUCKS.

DRAKE OR YOUNG DRAKE,
DUCK OR DUCKLING

- Aylesbury.
- Rouen.
- Blue Orpington
- Any other breed.

POULTRY—continued

GEESE.

GANDER AND GOOSE
Any variety.

TURKEYS.

- Cock.
- Hen.

PRODUCE (£265 15s.).

BUTTER.

Box of Twelve 2 lb. Rolls or Squares of BUTTER, not more than 1 per cent. salt
1st 47, 2nd 27 3rd 17

	Prizes		
	1st	2nd	3rd
TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses	2	1	10
TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned	2	1	10
TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses	2	1	10
TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned	2	1	10
THREE POUNDS OF FRESH BUTTER, slightly salted, made up in pounds in the most attractive marketable design	2	1	10
THREE POUNDS OF FRESH BUTTER, slightly salted, made up in pounds and packed in non-returnable boxes for transmission by rail or parcel post	2	1	10

CHEESE (made in 1911)

	Prizes			
	1st	2nd	3rd	4th
3 Cheddar in each Entry.	4	3	2	1
THREE CHEDDAR, not less than 50 lb. each	4	3	2	1
THREE CHEDDAR TRUCKLES	3	2	1	-
THREE CHESHIRE (coloured), of not less than 40 lb. each	4	3	2	1
THREE CHESHIRE (un coloured), of not less than 40 lb. each	1	3	2	1
THREE DOUBLE GLOUCESTER, not less than 22 lb. each	4	3	2	1
THREE LANCASHIRE, not over 12 lb. each	3	2	1	-
THREE MILTON	3	2	1	-
THREE WENSLEYDALE (Stilton shape)	3	2	1	-

- ¹ Offered through the Black Sumatra Club
- ² Offered by the Sussex Poultry Club.
- ³ Offered by the Maline Poultry Club.
- ⁴ Offered by the Campine Club.

	Prizes		
	1st	2nd	3rd
CIDER AND PERRY.			
Cask of DRY CIDER, made in 1910	1	2	1
Cask of SWEET CIDER, made in 1910	4	2	1
Cask of CIDER, made previous to 1910	4	2	1
ONE DOZ DRY CIDER, made in 1910	4	2	1
ONE DOZ SWEET CIDER, made in 1910	4	2	1
ONE DOZ CIDER, made previous to 1910	4	2	1
ONE DOZ DRY PERRY	4	2	1
ONE DOZ. SWEET PERRY.	4	2	1

A CHALLENGE CUP for the best exhibit of Cider.

WOOL (of 1911 Clip).			
3 Places in each County.			
Leicester or Border Leicester	3	2	1
Lincoln	3	2	1
Kent or Romney Marsh	3	2	1
Any other Long Wool	3	2	1
Southdown	3	2	1
Shropshire	3	2	1
Suffolk	3	2	1
Any other Short Wool	3	2	1
Welsh	3	2	1
Cheviot	3	2	1
Scotch	3	2	1

HIVES, HONEY, AND BEE APPLIANCES.			
Collection of HIVES	80	40	20
FRAME HIVE.	20	15	10
Do for Cottage use	20	15	10
HONEY EXTRACTOR	15	10	-
OBSERVATORY HIVE (not less than 8 frames)	20	15	10
USEFUL APPLIANCES.	10	-	-

HONEY (Local Classes).			
(Open to members of North Norfolk Bee Keepers' Association only.)			
4 Sections of COMB HONEY, about 4 lb.	10	7/6	Cert. of Merit.
RUN OR EXTRACTED, LIGHT-COLOURED HONEY, about 4 lb.	10	7/6	Cert. of Merit.
1 lb. of WAX	7/6	5	-
Collective Exhibit of COMB HONEY; RUN OR EXTRACTED LIGHT-COLOURED HONEY; and 1 lb. of WAX	20	10	Cert. of Merit.

HONEY--(Open Competition)

For the purposes of Classes for Honey the United Kingdom has been divided into Two Districts:

- 1 Counties of Cheshire, Cumberland, Derby, Durham, Hereford, Lancashire, Leicester, Lincoln, Monmouth, Northumberland, Nottingham, Rutland, Salop, Stafford, Warwick, Westmorland, Worcester, Yorkshire the Isle of Man, Ireland, Scotland, or Wales.
- 2 Counties of Bedford, Berks., Bucks., Cambridge, Cornwall, Devon, Dorset, Essex, Gloucester, Hampshire, Herts., Hunts., Isle of Wight, Kent, Middlesex, Norfolk, Northampton, Oxford, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

For each of the above Districts the following four Classes and Prizes, for Honey of any year, have been provided:—

	Prizes		
	1st	2nd	3rd
12 Sections of COMB HONEY, about 12 lb.	20	15	10
RUN OR EXTRACTED, LIGHT-COLOURED HONEY, about 12 lb.	20	15	10
RUN OR EXTRACTED, MEDIUM OR DARK-COLOURED HONEY, about 12 lb.	20	15	10
GRANULATED HONEY, about 12 lb.	20	15	10

MISCELLANEOUS.

Shallow frames of COMB HONEY, for extracting	20	15	10
Jars of HEATHER HONEY, about 6 lb.	20	15	10
Jars of HEATHER MIXTURE EXTRACTED HONEY, about 6 lb.	20	15	10
DISPLAY OF HONEY	80	20	10
2 lb. of WAX	10	7/6	5
5 lb. of WAX, in marketable form, suitable for retail trade	10	7/6	5
HONEY VINEGAR, 1 quart.	7/6	5	-
MEAD, 1 quart	7/6	5	-
OTHER PRACTICAL EXHIBITS	10	-	-
OTHER SCIENTIFIC EXHIBITS	10	-	-

HORSE-SHOEING COMPETITIONS (£81).

(Open to the United Kingdom.)

CLASS I. Hunters. CLASS II Roadsters. CLASS III. Cart Horses.

Prizes in each Class as follows:—1st, 5l.; 2nd, 3l. 10s.; 3rd, 2l. 10s.; 4th, 2l.; 5th, 1l. 10s.; 6th, 1l.

A Gold Medal will be presented to the First Prize Winner in each Class.

A Silver Medal and a Bronze Medal in each Class to be competed for by Members of the National Master Farriers' Association.

- 1 Offered by Cider Growers of the West of England.
- 2 Offered by the Worshipful Company of Farriers.
- 3 Offered by the National Master Farriers' Association

BUTTER-MAKING COMPETITIONS (£146).

The Competitions will be open only to those resident in the Counties of Norfolk, Suffolk, Essex, Cambridgeshire, Huntingdon, Bedford, and Hertford, who have been pupils or received instruction in Dairying at their respective County Council Institutes or Dairy Schools since the 1st day of January, 1908, and who have not previously to the 31st of May, 1911, won a Prize in an open class of the Shows of the R.A.S.N., Bath and West, Royal Counties, and at the London Dairy Show.

The following Prizes are offered on each day:—1st Prize, 5/-; 2nd Prize, 3/-; 3rd Prize, 2/-; 4th Prize, 1/-; 5th Prize, 10s. Certificates of Merit will be given to those candidates obtaining 85 points out of a possible 100.

FARM PRIZES (£480).¹

(Open to bona-fide Tenant Farmers.)

The following Prizes are offered by the Norwich Local Committee for the best-managed Farms in Norfolk and Suffolk.

CLASS I.—Farm, chiefly Arable, of 500 acres or over, exclusive of Heath and Salt ngs. 1st Prize, 100/-; 2nd Prize, 50/-; 3rd Prize, 20/-.

CLASS II.—Farm, chiefly Arable, of not less than 250 acres and under 500 acres, exclusive of Heath and Salt ngs. 1st Prize, 75/-; 2nd Prize, 30/-; 3rd Prize, 15/-.

CLASS III.—Farm, chiefly Arable, of not less than 100 acres and under 250 acres, exclusive of Heath and Salt ngs. 1st Prize, 50/-; 2nd Prize, 25/-; 3rd Prize, 10/-.

CLASS IV.—Farm, chiefly Arable, of not less than 50 acres and under 100 acres, exclusive of Heath and Salt ngs. 1st Prize, 40/-; 2nd Prize, 20/-; 3rd Prize, 10/-.

CLASS V.—Farm, chiefly Arable, of not less than 10 acres and under 50 acres, exclusive of Heath and Salt ngs. 1st Prize, 20/-; 2nd Prize, 10/-; 3rd Prize, 5/-.

HORTICULTURAL EXHIBITION.

Prizes amounting to 350/- are offered by the Norwich Local Committee.

¹ Offered by the Norwich Local Committee.

INDEX TO VOLUME 71.

1910.

The titles of Articles are printed in Italics. The Roman numerals refer to the Appendix.

ABC

- A**BORTION, Epizootic, in Cattle, 295
 Acreage of Crops in United Kingdom, 350
 Acting-President for 1911, Election of, xxxviii
 Adams, Death of Mr. George, xx
 Address to King George V., xliii
 Admissions by Payment at Liverpool Show, 151
 Aftermath, 61
Agricultural Education Exhibition, 1910, 223-226
 Agricultural Seeds in Canada, 100
 Agricultural Statistics in Canada, 102
 Agricultural Words, Origin of Old, 56
 Alkalinity of Lime, 817
 Almond, First Prize Farm of Mr., 219
 Ammonia, 11
 Anderson (Robert), *Forestry Exhibition at Liverpool*, 1910, 227-230
Annual Report for 1910 of the Botanist, 311-315
 for 1910 of the Consulting Chemist, 300-311
 for 1910 of the Principal of the Royal Veterinary College, 249-300
 for 1910 of the Zoologist, 316-321
 Anthrax, 289
 - Order, 290
 Argentina, Imports of Meat from, 137
 Arthur of Connaught, Prince, Visit to Show of, 149
 Asparagus, Obscure Disease of, 815
 Auditors, Election of, xxxix
 Autumn of 1910, The, 363
 Awards of Prizes at Show of 1910, xlv
BACTERIOLOGY, 10
 Balance Sheet, 1910, Ordinary, viii
 - *Liverpool Show*, xli
 Bands at Liverpool Show, 151
 Barley, Continuous Growing of, 826
 - *Old Name for*, 59
 Crop Returns, 351
 Basic slag, 305
 Biffen (Prof. R. H.), *Annual Report for 1910 of the Botanist*, 311-315
 Black Currant, Silver Leaf on, 313
 Blackshaw, First Prize Farm of the Executors of the late John, 258
 Botanist, *Annual Report of*, 311-315
 Boxing System of Raising Potatoes, 213
 Brazil, Exhibit by Commission of Economic Expansion of, 210
 Bristol, Invitation to, for Show, xxxiii
 British Columbia, Agriculture in, 110

ORE

- Brodie, (F. J.), *The Weather of the Past Agricultural Year*, 358-363
 Butter at Liverpool Show, 174
 Butter Churns, 210
 Butter Making Competitions at Liverpool Show, 178
 Butter Tests at the Liverpool Show, 217
CASTUM, Influence of, Salts of, on Wheat, 344
 Canada, State Aid to Agriculture in, 90
 Carbon Disulphide for Soil, 25
 Carter, Second Prize Farm of Mr. W. H., 259
 Catch Crop of Cauliflowers, 251
 Cattle at Liverpool Show, 158
 - *Pathology Medal Winners*, 280
 - *Prices of Fat*, 357
 Chaff Cutter, 201
 Cheese at Liverpool Show, 174
 Chemist, *Annual Report of Consulting*, 300-311
 Chevallier (J. B.), *Red Poll Cattle*, 145-155
 Chicken Manure, 308
Churnability of Cream, 113-122
 Cider at Liverpool Show, 175
 Cold Storage in Canada, 100
 College of Agriculture's Exhibit at Liverpool Show, 225
 Colouring of Milk and Butter, 221
 Committees for 1911, Standing, xxxv
 Compound Cakes and Moulds, 308
 Congenital Tuberculosis, 28
 Connaught, Visit to Show of Prince Arthur of, 149
Contemporary Agricultural Law, 122-135
 Cooper (W. F.), *Churnability of Cream*, 113-122
 Corbets' (Sir Walter) Red Poll Herd, 54
 Corky Scab of Potatoes, 314
 Corn Crop Pests, 318
 Corn Crops, Imports, Quantities, and Values of, 355
 - *Prices of British*, 356
 - *and Seed Drill*, 211
 Cotton Cake, 302
 Council, Additions to, xxxiv
 - *List of*, i.
 - *Meetings in 1910, Minutes of*, xvii
 Cowslip, Meanings of, 58
 Cranworth's (Lord) Red Poll Herd, 54
 Cream, Churnability of, 113-122

CHE

Cream Separators, 201, 204
Crops, Experiment on the Inoculation of, 350
Crops and Grass, Acreage under, 352
- Produce of, and Yield per Acre, 354
Croskell, Second Prize Farm of Mr. T., 206
Cross (Wm.), *Miscellaneous Implements exhibited at Liverpool*, 1910, 193-213
Cultivator, 212
Cylinder for Dressing Seeds, 199

DAIRYING in Canada, 97
Deaths of Governors and Members during year, 270, 271
Deputations from York and Doncaster, xviii
Development and Road Improvement Funds Act, 122
Devon Pack Horse as an Army Horse, The, 79-90
- Colour of, 85
- History of, 80
- Longevity and Soundness of, 86
- Origin of, 83
Diseases of Animals Act, 1910, 122
Dissolved Bones, 306
Douglas (London M.), *The Meat Industry in its Relation to Agriculture in the United Kingdom*, 136-147
Draught Horses, Parade of, 150, 154
Drawings and Essays at Liverpool Show, 150
Drilling Machine, Portable, 206
Drills, 211
Dual Purpose Cow at Liverpool, The, 364

"EASY-TIP" Wagon, 206
Education in Canada, 106
Elimination of Tuberculosis, 37
Elliot's System of laying down Land to Grass, 309
English Dialect Dictionary, 57
Entries for Liverpool Show, 152
Epizootic Abortion in Cattle, 295
Essays and Drawings at Liverpool Show, 150
Estate Roller, 203
Examinations for N.D.A. and N.D.D., Results of, 282, 286
Expenditure and Receipts at Liverpool Show, xii
Experiment on the Colouring of Milk and Butter, 221
Experimental Farms in Canada, 91
Experiments at Woburn Farm, 322

FARM Lorry, 204
Farm Prize Competition, 1910, 210-209
Farmers' Institutes in Canada, 106
Fat Cattle, Prices of, 357
Feeding Stuffs, 302
"Fermière, La," by Giele and Graftian, 370
Fertilisers, 305

FOR

Field Experiments at Woburn, 322
Financial Statement by Chairman of Finance Committee, v
"Finger and Toe," 81
Fire in Showyard, 119
Fish Guano, 306
Floors for Cow Houses, 206
Foot and Mouth Disease, 294
Foot-rot Trough and Rack, 203
Forest Tree Pests, 321
Forestry Exhibition at Liverpool, 1910, 227-230
Forrest, Death of Mr. Robert, x
Foster-Mother for Chickens, 206
Francis of Teck, Death of Prince, xxxii
French-Canadian Horses, 85
Fruit in Canada, 97
Pests, 319
Funds in Trust held by Society, vii
Fungoid Diseases of Plants, 312

GARDEN Crop Pests, 318
Gate Hanging, Adjustable, 201
General Meeting, Report of Council to, December 7, 1910, 270-281; Proceedings at, xxv
in Showyard, 150; Proceedings at, xxviii
Giles Family, The, 81
Glanders, 283
- in Canada, 96
Godfrey (E. IL.), *State Aid to Agriculture in Canada*, 90-113
Goodwin, First Prize Farm of Mr. T. C., 254
Gooseberries attacked by Mildew, 313
Governors of the Society, Distribution of, iii
- Number of, since Establishment of Society, iv
Grass, Acreage under, 352
Green - manuring Experiment at Woburn, 332, 349
Grinding Mill, 206
Ground Lime, 308

HARPER-ADAMS College's Exhibit at Liverpool Show, 220
Hay Rick Covers, 209
Heating Soil, 20
Heredity in Tuberculosis, 27, 33
Hills' Experiments, 314
Hives, Honey, &c., at Liverpool Show, 177
Hony Cress, 315
Hogg (W. H.), *Farm Prize Competition*, 1910, 210-209
Hoisting and Hauling Gear, 208
Home Nurseries Competition, 239
Hops, Estimated Total Production of, 355
Horizontal Engine, 213
Horse Hoe, 283
Horse-shoeing Competitions at Liverpool Show, 178

HOR

- Horses at Liverpool Show, 152
 French-Canadian 95
 Horticultural Exhibition at Liverpool Show, 178
 Humans, 10

INCURMENT Value Duty, 124
 Inoculation of Crops, Experiments on, 330

- Irish Pack Horse, 88
 Iron, Influence of, on Barley, 315

JUDGES at Liverpool Show, xlii

KING EDWARD VII. and the Royal Agricultural Society of England, 1-9.

King Edward VII., Acceptance of Presidency by the late, xviii
 Death of, xxiii

King George V., Acceptance of Presidency by, xxv, xxxvi

"**LADY of the Farm World, The**," 370

"**La Fermière**," by Hele and Graftian, 370

Lid Fastener for Churn, 201

Light Oat Extractor, 203

- Lime, Experiment on the use of, 334
 - Experiments with different kinds on Old Pasture, 313
 - Influence of, in different forms, on Wheat, 316
 - Influence of, on a soil rich in Magnesia, 317

Linsed Oake, 302

List of Council, i

Lithium, Influence of Salts of, on Wheat, 841

Live Stock in Canada, 91
 in Great Britain, &c., Number of, 352

- Returns, 351

Liverpool Show, The, 147-178

- Attendance at, 151
 - Awards of Prizes at, xvi
 - Officials and Judges at, xlii
 - Prize Sheet and Entries for, 152, 153
 - Receipts and Expenditure at, xlii-xv

Local Committee, Thanks to, xxix

Lucerne, Variation of, 333

Lurry, Farm, 204

MACKENZIE (K. J. J.), *King Edward VII. and the Royal Agricultural Society of England*, 1-9

McFadyen (Sir John), *Annual Report for 1910 of the Principal of the Royal Veterinary College*, 289-300
 - Tuberculosis, as regards Heredity in Cuvation, and Elimination from Infected Herds, 27-45

McRoe (Thomas), *The Liverpool Show*, 1910, 147-178

NOR

Magnesia, Influence of, in different forms on Wheat, 316

-- Influence of, on Clover and Beans, 318

Manganese, Influence of, on Barley, 315

Mangolds, 305

- Experiment with Nitrogenous Top-dressings on, 336

- Obsolete Disease of, 315

Mangling Machine, 210

Manure Distributor and Spreader, 203
 - Mill, 203

Manuring of old Pasture Land, 341

Margerison (Samuel), *Plantations and Home Nurseries Competition*, 1910, 230-240

Maritime Provinces, Canada, Agriculture in, 108

Marshall (Dr. F. H. A.), "The Physiology of Reproduction," 366

Mason's (R. Harvey) Red Poll Herd, 51

Mathews (Ernest), *Milk and Butter Tests at the Liverpool Show*, 1910, 213-223

Meat Industry in its Relation to Agriculture in the United Kingdom, The, 186-147

Medick, 58

Members of Society, Distribution of, iii

- Deaths of during Year, 270, 271

- Numbers of, since Establishment of Society, iv

Meteorology at Liverpool Show, 226

Milk and Butter Tests at the Liverpool Show, 1910, 213-223

Milking Machine, 208

Minutes of Council Meetings in 1910, xvii

Miscellaneous Implements exhibited at Liverpool, 1910, 199-213

Motor-driven Roller, 207

Motor Mower, 211

Motors, Trials of Agricultural, 179

Mowers, 211

Multifuel Vertical Engine, 207

NATIONAL Diploma, Results of Examinations for, in Agriculture, 252; in Dairying, 286

National Fruit and Cider Institute's Exhibits at Liverpool Show, 225

National Horse Supply, 79

New Implements, 199-213

Nitrate of Lime, 308

Nitrogenous Top-dressings, Experiments with, 335, 349

- Residual Value of, 337

Norfolk Experimental Farm, 366

Norfolk Sheep, 65

North-West Provinces, Canada, Agriculture in, 109

Norwich Show, Prize List for, xxxiii

OAT

OAT Extractor, 203
Oats, Experiment with Nitro-
genous Top-dressings on, 335
Officials, 301
Officials and Judges at Liverpool
Show, xlii
Officials of the Society, li
Olland, 62
Ontario, Agriculture in, 101
*Origin of Some Old Agricultural
Words, The*, 56-63

PAUK Horse, History of the, 80
Parade of Daught Horses at
Liverpool, 150, 151
Parasitic Diseases of Animals, 316
Perry at Liverpool Show, 175
Phoenix (half Outter, 201
"Physiology of Reproduction," by
Dr. Marshall, 366
Pigs at Liverpool Show, 169
*Plantations and Home Nurseries Com-
petition*, 1910, 230-210
Plants, Diseases of, 312
Plough, Steam, 208
Potato Digger, 205
— Raiser, 205
— Spraying Experiments, 313
Potatoes, Corky Scab of, 314
Pot-culture Experiments at Woburn,
1909, 313
Poultry at Liverpool Show, 172
President for 1911, xxv, xxxvi
— Thanks to, at General Meeting,
xxx, xl
Prize List for Norwich Show, 1911,
xxxiii
Proceedings at General Meetings in
1910: June 23, xxviii; December 7,
xxxv
Produce Returns for 1910, 351
*Production of Plant Food in the Soil,
The*, 9-26
Protozoa, 19

QUEBEC, Agriculture in, 104
Queen Victoria Gifts Fund,
Appointment of new Trustee, 280

RAILWAY Companies, Thanks to,
xxix
Rainfall of 1910, *The*, 300, 301
— at Woburn, 1910, 343
Rainingill, Second Prize Farm of Mr.
S. S., 264
Raspberry Beetle, 319
Receipts and Expenditure at Liver-
pool Show, xii
Red Poll Cattle, 18-56
Refuge Manure, 307
Report of Council to General Meeting,
December 7, 1910, 270-281
Report on the Results of the Examin-
ations, National Diploma in Agricul-
ture, 282; National Diploma in
Dairying, 286
Rice Shades, 304

STO

Roller, Motor Driven, 207
Root Crop Pests, 315
— Cutter, 205
— Elevator and Outter, 207
Washer, 210
Rosbotham, Second Prize Farm of
Mr. S. T., 263
Rotation Experiments at Woburn, 328
Rothschild's (Lord) Red Poll Herd, 19
Royal Agricultural Society's Exhibit
at Liverpool Show, 224
Royal Meteorological Society's Exhi-
bit at Liverpool Show, 226
Royal Veterinary College, Annual
Report for 1910 of the Principal of
the, 289-300
Russell (Edward J.), *The Production
of Plant Food in the Soil*, 9-26

SAIN FOIN, Attack on, 311
Salt, 304
Samples analysed by Consulting
Chemist, List of, 310, 311
Scrappings of Skins, 307
Seeds, Samples analysed, 311
Self-fastening Blade for Horse Hoos,
205
Sharps, 301
Shedding in Implement Yard at
Liverpool Show, 152
Sheep at Liverpool Show, 161
and Pig Trough, 206
— Plant, Electric, 209
— Rack, 210
— Shearing Machine, 207
Trough, 206
Shepherd, First Prize Farm of Mr.
Robert, 212
Sherwood (S. R.), *Suffolk Sheep*, 61-78
Side Delivery Rake, 206
Silver-leaf on Black Currant, 313
Skent (Walter W.), *The Origin of Some
Old Agricultural Words*, 56-63
Small Holdings Act (1910), 123
Soil needing Lime, 308
— under Elliot's System of Laying
down Grass, 308
Soot, 308
Soyn Bean Cake, 303
Special Committee, Report of, xix
Spencer (Aubrey J.), *Contemporary
Agricultural Law*, 122-135
Spencer, The 5th Earl, 371
Spring of 1910, *The*, 359
State Aid to Agriculture in Canada,
90-113
*Statistics affecting British Agricultural
Interests*, 350-358
Statistics, Agricultural, in Canada,
103
Staveley (Lt.-Col. C. R.), *The Devon
Puck Horse as an Army Horse*, 79-90
Steam Plough, 208
Sterilisation, 17
Store Cattle, Feeding of, 140
— Trade, 186

STO

- Stover, 62
 Strongylus Worms, 317
 Suction Gas Plant, 204, 213
Suffolk Sheep, 61-74
 Crossing of, 77
 Exportation of, 76
 — History of the Breed of, 61
 — Line Breeding, 78
 Live Weights of, 73
 — Management of, 71
 — Points of the Breed of, 68
 Prices at Sales, 77
 — Showyard Distinctions, 72
 Starting a Flock of, 77
 Sugar Beet, 304
 Experiment with, at Woburn, 338
 Summer of 1910, *The*, 362
 Sunshine of 1910, *The*, 360
 Swath Turner for Small Holders, 207
 Swedes, Attacks on, 314
 Swine Fever, 291

TALLENT, Death of Mr. Herbert, xxxi

- Tannery Refuse, 307
 Tar Spraying Machine, 211
 Tares, as an old Agricultural Word, (R)
 Taylor, Death of Mr. Garrett, xviii
 Red Poll Herd of the late, 19
 Temperature of 1910, *The*, 360
 Thanks to Chairman of General Meeting, xli
 Thermographs, 99
 Tipping Wagon, 209
 Traction Engines, 210, 211
Trials of Agricultural Motors, 1910, 179-198
 Trust Funds held by the Society, vii
 Trustees, Election of, xxxix
 — List of, i
 Tuberculin Test, 89
Tuberculosis, as regards Heredity in Causation, and Elimination from Infected Herds, 27-45
 Turnip Crop Returns, 351
 Turnip-cutting Cart, 211
 Turnstile and Collapsible Gate, 203

ZOO

- UNDEVELOPED Land Duty, 125
 — University College of North Wales Exhibit at Liverpool Show, 225
 — University College of Wales Exhibit at Liverpool Show, 225
 VACCINES, Distribution of, in Canada, 97
 Vetches, as an old Agricultural Word, (R)
 Veterinary Inspectors at Liverpool Show, xlv
 Vice-Presidents, Election of, xxxix
 — List of, i
 Voelcker (Dr. J. A.), *Annual Report for 1910 of the Consulting Chemist*, 300-311
 — *The Woburn Experimental Station of the Royal Agricultural Society of England*, 322-350
 Volatile Antiseptics on Soil, 25
 WARBLE-FLY, 816
 Warburton (Cheil), *Annual Report for 1910 of the Zoologist*, 316-321
 Water, Green Growth on, in Reservoir, 310
Weather of the Past Agricultural Year, The, 358-363
 Wheat, Continuous Growing of, 322
 — Experiments with Varieties of, at Woburn, 339
 — Winter of 1909-10, *The*, 359
 Wire Fencing, 204
Woburn Experimental Station of the Royal Agricultural Society of England, The, 322-350
 Woburn Farm, Official Visit to, 278
 Wool at Liverpool Show, 177
 Prices of, 357
 Wringing and Mangling Machine, 210
 YOUNG (Arthur) on *Suffolk Sheep*, 65, 66
 ZINC Salts, Influence of, on Wheat, 345
 Zoologist, *Annual Report of*, 316-321

PUBLICATIONS OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

JOURNAL OF THE SOCIETY.

Now published annually as an Annual Volume in paper covers of about 500 pages Free to Members; Price to Non-Members, Ten Shillings.

FARM ACCOUNT BOOKS.

No. 1, A DIARY, combining Cash Account with daily record of Farm Transactions. Price 1s.
No. 2, A FARM ACCOUNT BOOK, showing payments and receipts, and supplying a form of Annual Balance Sheet. Price 5s. 6d. Published for the Society and sold by Messrs. FORSTER, GROOM & CO, Ltd., 15 Charing Cross, London, W.C.

PAMPHLETS.

VETERINARY PAMPHLETS BY PROFESSOR SIR GEORGE BROWN, D.B.
DENTITION AS INDICATIVE OF THE AGE OF FARM ANIMALS. Fifth Edition (1902). 61 pp. With 80 Illustrations. Price 1s.
ANIMALS OF THE FARM IN HEALTH AND DISEASE. 72 pp. With 52 Illustrations. Fourth Edition (1902). Price 1s.
THE STRUCTURE OF THE HORSE'S FOOT AND THE PRINCIPLES OF SHOEING. 23 pp. Fourth and Enlarged Edition (1902). With 12 Illustrations. Price 6d.
CONTAGIOUS FOOT ROT OF SHEEP. Second and Enlarged Edition (1906). 21 pp. With 8 Illustrations. Price 1s.

OTHER VETERINARY PAMPHLETS:

THE MARE AND FOAL. By Professor J. WORTHLEY AIRE, M.R.C.V.S. 58 pp. With 20 Illustrations. Second Edition (1900). Price 1s.
THE LAMBING PEN. By HAROLD LEECH. 2nd Ed. (1907). 37 pp. With 6 Illustrations. Price 6d.

PAMPHLETS BY MR. CHARLES WHITEHEAD, F.L.S., F.G.S.:

PRACTICAL HINTS ON FARMING. (1904). With 10 Illustrations. 43 pp. Price 1s.
HOP CULTIVATION. With 18 Illustrations (1903). 46 pp. Price 1s.

DAIRY PAMPHLETS.

(Issued under the authority of the Dairy Committee of the Society.)

THE PRACTICE OF (a) CHEDDAR, (b) CHESHIRE, AND (c) STILTON CHEESE-MAKING. Price 2d. each.
SIMPLE RULES FOR BUTTER-MAKING. Revised, 1907. (Sheet.) Price 1d. each, or 5s. per 100 Mounted on card and varnished, to hang up in the Dairy, 8d. each.
RECIPES FOR MAKING CREAM AND SOFT CHEESES. Price 1d.

OTHER PAMPHLETS:

THE VALUATION OF UNEXHAUSTED MANURES OBTAINED BY THE CONSUMPTION OF FOODS BY STOCK. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D., and A. D. HALL, M.A. With 3 Diagrams (1903). 41 pp. Price 1s.
PRACTICAL HINTS ON VEGETABLE FARMING. By JAMES IDALE (1901). With 15 Illustrations. 41 pp. Price 1s.
TABLES FOR ESTIMATING DEAD WEIGHT AND VALUE OF CATTLE FROM LIVE WEIGHT. By Sir JOHN B. LAWES, Bart., F.R.S. Price 1s.
THE WOBBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. Annual Reports on Field, Feeding, and Pot-culture Experiments, 1899-1910. Price 1s. each.
REPORT ON THE WOBBURN POT-CULTURE STATION. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. With 17 Illustrations (1900). 52 pp. Price 2s. 6d.
THE MAKING OF THE LAND IN ENGLAND. By ALBERT PRILL. (1899). 27 pp. Price 6d.
THE MANAGEMENT AND PLANTING OF BRITISH WOODLANDS. By Professor CHARLES E. CURTIS, F.R.I. (1904). With 6 Illustrations. 56 pp. Price 1s.
THE CONVERSION OF HOME-GROWN TIMBER. By ROBERT ANDERSON, F.R.I. (1901). With 4 Illustrations. 28 pp. Price 1s.
INSECTS INJURIOUS TO FOREST TREES. By GEORGE WARBURTON, M.A., F.Z.S. (1901). With 7 Illustrations. 10 pp. Price 1s.
ORCHARD AND BUSH-FRUIT PESTS AND HOW TO COMBAT THEM. By GEORGE WARBURTON, M.A., F.Z.S. With 13 Illustrations. Second Edition (1910). 20 pp. Price 6d.
THE DRYING OF FRUIT AND VEGETABLES. By J. AUGUSTUS VOELCKER, M.A., B.Sc., Ph.D. With 4 Illustrations (1897). 23 pp. Price 6d.
COTTAGE SANITATION IN RURAL DISTRICTS. By H. MACLEAN WILSON, M.D., LL.M. With a Preface by T. FRIDGIN TAYLOR, F.R.S. Second and Enlarged Edition. 52 pp. 12 Illustrations (1899). Price 3d. per copy; 2s. per doz.; 12s. 6d. per 100.
THE AGRICULTURAL HOLDINGS ACT, 1900. By H. B. L. DRYCE. (1900). 80 pp. Price 6d.

The above can be obtained at the Society's House, 16 Bedford Square, London, W.C., through any bookseller, or of Mr. JOHN MURRAY, 50a Albemarle Street, W.

Copies of pamphlets sold at not less than One Shilling each are obtainable by Members of the Society at half-price on direct application to the Secretary.

COLOURED DIAGRAMS.

(Obtainable from Messrs. W. & A. K. Johnston, Ltd., 6 Paternoster Buildings, E.C., and Edinburgh.)

TWENTY-SIX DIAGRAMS OF INJURIOUS INSECTS. Drawn from Nature by the late Miss GEORGINA F. ORMEROD, in conjunction with the late Miss ELEANOR A. ORMEROD, F.R.Met.Soc. Arranged in Five Sets, comprising (1) Common Insect Attacks; (2) Insects affecting Corn Crops and Grass; (3) Insects affecting Fruit Crops; (4) Insects affecting Roots and Gardens; (5) Insects affecting Trees. Price 6s. per set for Nos. 1, 2, and 4, and 7s. per set for Nos. 3 and 5. Varnished and mounted on canvas, with rollers, price 10s. and 12s. per set. Single diagrams, price 1s. 6d. each, or 2s. 6d. mounted.
EIGHT DIAGRAMS REPRESENTING THE LIFE-HISTORY OF THE WHEAT PLANT (after FRANCIS BAUER). With Explanatory Pamphlet by W. CARRUTHERS, F.R.S. Price (including Pamphlet) 10s. per Set of Eight Diagrams.
THE POTATO DISEASE. By W. CARRUTHERS, F.R.S. Price 1s.

**IMPERIAL COUNCIL OF AGRICULTURAL
RESEARCH LIBRARY**

*This book was taken from the Library on
the date last stamped.*

--	--	--	--

